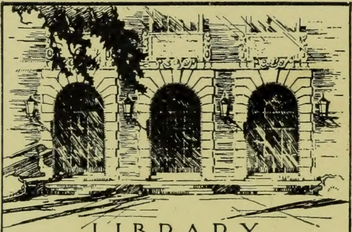

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PHOTOGRAPHY IN COLORS.

THE man that shall first produce a photograph in colors, and rightly protects his discovery, may be sure of a fortune. His name will go down to posterity with a halo of glory, to be remembered with the names of the artists who have reproduced with brush and color those beauties of nature that please us so well.

From time to time we intend to review the work done in this direction. We shall thus give an idea of the lines of thought and study already pursued, and indicate the fields that yet remain open to the investigator in this particular line of the photographic art. Already in Europe much has been done and is in process of development in this field.

The highly interesting work of Dr. Eder is a step in this direction. We notice in a recent number of a German exchange that he has succeeded in making a photograph of a water-color painting of Hildebrandt's, in which the bright yellow of the evening sky has given a true impression upon the photographic plate. This is not a photograph in colors, but it is a reproduction of the correct gradations of shading from a color with almost no actinic effect upon ordinary plates. This same picture, photographed by the ordinary method, gave a sky "bedecked with heavy-thunder clouds." Dr. Eder calls this method "orthochromatic," as it gives the colors in their true relation to one another.

Every step of this character is a conquest, of which only the future can tell the value, and like the first efforts of Daguerre, will most surely lead to the higher results we look for.

The highly interesting researches upon the various eosine colors and allied organic bodies give us a glimpse into an almost unknown land, from which we may expect rich harvests in the near future. The action of light upon these newly-discovered organic bodies has received little or no attention from the standpoint of photography. The chemist is satisfied to produce a new color, and call it "fast," "a brilliant shade," and so forth. But who ever tried the effect of making the chemical changes necessary to produce these colors out of the influence of daylight? We have never heard of such experiments, and have little doubt but that they would lead to some wonderful results. The lovely hues that delight our eyes when the woods are decked in the colors of autumn are but the changed compounds that at an earlier date were shades of green. The green chlorophyl has produced nameless chemical compounds with a red and golden shade; and the sunlight has been at work producing this chlorophyl in the plants by a process which, curiously enough, is analogous to the development of the image in photography. The production of chlorophyl in the plant is a process of deoxidation; without sunlight this does not go on, and the green color is not produced.

The use of the spectroscope, with its prism forcing the rays of light to take their positions side by side, also gives the investigating photographer a means of experimenting upon the various substances, both organic or inorganic, that are sensitive to light. The highly interesting paper of Dr. V. Schuman, a translation of which appears in this issue of the Bulletin, on "Chloro-iodide gelatine emulsions," throws additional light upon the question of photographs in colors, and deserves careful reading.

Some years ago Albert, of Munich, produced some photographs in colors that were a step in this direction; but we understand that he has done nothing with the process lately. His method, as far as we have been able to ascertain, consisted in the production of as many negatives as there were colors in the picture to be taken. This was accomplished by interposing colored media between the picture and the lens, so that only the light of the same color as the medium used acted upon the sensitive plate in the camera. By means of these negatives colored albertype positives were printed, which by the combination of the colors gave effects resembling those of natural colored objects. A host of manipulations were necessary to produce these effects, and we believe little or nothing has been done with the process lately.

Goupil & Co., of Paris, produced some years ago a number of pictures that appeared to be photographs in colors, and we have seen a copperplate said to have been used in the process but all details are guarded secrets.

Any of our subscribers interested in this line of investigation, and having historical data relating to the subject, may be assured of a hearty welcome in the pages of the Bulletin.

PHOTOGRAPHY.

A HISTORY OF ITS ORIGIN AND PROGRESS.

BY C. F. CHANDLER, PH.D.

(*Gr. Φϛω light, and γρᾴβειν, to write.*)

The art of producing pictures by the aid of light acting upon chemically prepared surfaces. The name is unfortunate, as it is not the light, the luminiferous principle of the sunshine, which accomplishes the result, but other emanations from the sun which, are associated in the sunbeam with the light and heat rays, to which the name actinic rays has been given. The name *heliography*, or *sun-writing*, which Nièpce applied to his process in 1827, is more appropriate, but has not been adopted.

History of Photography.—The action of the sunlight in effecting chemical changes, such as bleaching vegetable colors, etc., was noticed at a very early day. If it is true, as has been stated, that the *Egyptians* employed an indelible ink prepared with nitrate of silver, they could not have failed to notice the blacking of this salt in the sunlight, when in contact with cloth or other organic matter, or the production of chloride of silver and its behavior in sunlight. In *Dr. Hooper's "Rational Recreation,"* 1774, a method for writing on glass by the rays of the sun, is given as follows: "Dissolve chalk in aquafortis to the consistence of milk, and add to this a strong dissolution of silver. Keep this liquid in a glass decanter, well stopped. Then cut from a paper the letters you would have appear, and paste the paper on the decanter, which you are to place in the sun in such a manner that its rays may pass through the spaces cut out of the paper and fall on the surface of the liquor. The part of the glass through which the rays pass will turn black, and that under the paper will remain white." This experiment is attributed by Dr. J. W. Draper to Priestley. In 1777 Scheele called attention to the discoloration of silver salts, specially the chloride, in sunlight, and by exposing paper coated with chloride of silver to the solar spectrum, obtained by passing a beam of light through a prism, he found that the action was confined to the blue, indigo and violet end of the spectrum, and appeared even far beyond the extreme violet, beyond the visible spectrum, while no change took place in the green, yellow, orange or red portion of the spectrum. He thus demonstrated the fact that the rays which produce chemical action are not identical with the luminiferous rays, and that they are the most abundant at the more refrangible end of the spectrum. These rays have been called the "chemical rays," "deoxidising rays," "tithonic rays" (Dr. J. W. Draper), and "actinic rays" (Sir John Herschel). It is supposed that Matthew Boulton and his partner at the Soho Works, James Watt, actually obtained sun pictures as early as 1799, and perhaps before 1791. After Boulton's death pictures on paper, representing his own house prior to certain alterations in 1791, and faint pictures on two silver plates, were found among his papers, the latter labeled "sun pictures." Both the paper and silver pictures were pronounced by those who examined them to have been produced by photography. Unfortunately, no written statement of the methods employed could be found. The first well-authenticated attempts to produce pictures by means of sunlight were made in 1802 by Thomas Wedgwood the youngest son of Josiah Wedgwood, and Sir Humphrey Davy. Wedgwood moistened paper or leather with nitrate of silver and exposed it to the sunlight under leaves and paintings or glass, such as are used in magic lanterns; he even took profiles. Davy succeeded in obtaining pictures of objects seen in the solar microscope; but neither of these chemists was able to prevent the unchanged portions of the picture from becoming colored by exposure to diffused light, as they knew of no process for removing the unchanged silver salts from the paper.

In the year 1813 or 1814 Joseph Nicèphore Nièpce of Chalons, studied the action of light on certain resinous substances, with a view of obtaining unalterable images in the camera. He succeeded to a certain extent, coating a metallic plate with the resin, which was rendered insoluble by the strong lights; the unchanged portions, where the light had not fallen, were removed after exposure by solvents, exposing the metal; the picture being then fixed on the plate by etching with an acid. In 1824 Louis Jacques Maude Daguerre, of Bril on the Marne, began experiments, seeking to fix the pictures in the camera, and selecting paper impregnated with chloride or nitrate of silver as his material. He does not appear to have been any more successful than Wedgwood or Davy. In 1827 Nièpce communicated his process of *heliography* ("sun-sketching"), to the Royal Society, and in the same year he met Deguerre, and they entered into a compact to continue their investigations together, seeking to perfect the process, which is thus described by Muspratt:

"It consisted in coating a highly polished tablet of plated silver with a mixture of pitch or bitumen and essential oil of lavender, reduced to the consistency of thin varnish. After drying at a gentle heat, the prepared plate was exposed in the camera to the image thrown upon it, and after due time the latent impression was rendered visible by disengaging the unaffected parts. This was executed with a solvent composed of one part of oil of lavender, and ten of ordinary white petroloum or spirit of tar. On pouring this liquid over the plate, the impression began gradually to show itself; when sufficiently defined the plate was removed, the dissolving liquid allowed to drain off, and the operation terminated by careful washing. At this period they were anxiously seeking for a substitute for the varnish, and had recourse to alkaline sulphides and iodine for blackening the plates to form a ground for the picture; but the results were not as satisfactory even as the varnish coating, although the latter proved subsequently to be the most eligible in the hands of Daguerre. The heliographic method of Nièpce was a very slow and uncertain process, requiring several hours' exposure in a strong light before a tolerably defined impression was made."

"Daguerre improved the process by using the resin of the essential oil of lavender dissolved in alcohol for the basis, and the vapor of petroleum, which had not the effect of removing most of the varnish to the injury of the picture, as was the case in the other. From this period till that of Nièpce's death, the subject was actively prosecuted on both sides; but it would appear that the latter *savant* had lost faith in the efficacy of coating the plates with a metallic film, such as sulphide or iodide of silver; whilst Daguerre seemed as much impressed with these, or similar ones, being the true media for taking impressions. After the death of Nièpce in 1833, the compact was renewed between Daguerre and the son, Isidore Nièpce, and the research was as unflaggingly pursued as before."

In January, 1839, Daguerre announced the discovery of the beautiful process which bears his name, and which took the world by surprise. In July the Chamber of Deputies voted him a pension of 6,000 francs, afterwards making it 10,000, and to Isidore Nièpce a pension of 4,000 francs. The process was published and thrown open to all who chose to practice it.

The process of Daguerre consisted essentially in subjecting a plate of silver to the action of vapor of iodine, by which it became coated with a sensitive film of iodide of silver. It was next exposed in the camera, the image being made to fall upon the sensitive film, where it became impressed, although the change effected could not be detected by the eye. This latent picture was then developed by vapor of mercury, which produced different effects on the iodide surface, according as it had been more or less affected by the light. The unchanged iodide was then removed by a strong solution of hyposulphite of soda, when the picture became permanently fixed.

While the French were engaged in developing a process for fixing pictures on metallic plates, Henry Fox Talbot was busy in England endeavoring to render permanent pictures taken on paper in the camera obscura. He began his experiments in 1834, communicated the first account of his process of "photogenic drawing" to the Royal Society, January 31, 1839, and published a full account on February 21 of the same year. It consisted of exposing in the camera a paper first soaked in a weak solution of common salt, and afterwards washed over with a strong solution of nitrate of silver. The image thus obtained was a negative one, the lights being dark and the shadows light; the pictures were fixed in a solution of common salt. He took pictures in one-half second in the sun, and copied objects in the solar telescope. March 14, 1839, Sir John Herschel recommended hyposulphite of soda for fixing. Muspratt says that: "he also was the first to recommend the practice of saturating the saline washes used to prepare the paper with chloride of silver, and the employment of a double wash of nitrate of silver to be used in succession, alternated with drying the paper, with the view of doing away with the whitish spots so frequently seen in the pictures of Talbot at the time; he also noticed—as likewise Robert Hunt—a method of fixing the impression formed in the camera with chloride of mercury, and, at the same time, rendering the paper to all appearance fit for the ordinary uses of writing and the like; whilst nothing was required to develop the picture but simply washing with hyposulphite of soda."

"Another very efficient discovery of Talbot's may be here recorded—namely, the property of gallic acid in rendering the prepared paper so sensible as to be capable of receiving impressions by instantaneous exposure, owing to the gallic acid of the ingredients continuing and developing the effect of the sun's rays. This agent was ultimately superseded by pyrogallic acid, introduced by Archer, the reducing or developing action of which is much greater than that of the gallic compound." Roscoe in his article on Photography gives the following account of Talbot's great invention: "in 1841 Fox Talbot patented the beautiful process known as the "Talbotype or Calotype process," in which the paper is coated with iodide of silver by dipping it first in nitrate of silver, then in iodide of potassium. Paper thus prepared is not sensitive *per se* to the action of light, but may be rendered so by washing it over with a mixture of nitrate of silver and gallic or acetic acid. If it be exposed to the camera for two or three minutes, it does not receive a visible image (unless the light has been very strong); but still the compound has undergone a certain change by the influence of the light; for, on subsequently washing it over with the mixture of aceto-nitrate of silver and gallic acid, and gently warming it, a negative image comes out on it with great distinctness. This image is *fixed* by washing the paper with hyposulphite of sodium, which removes the whole of the iodide of silver not acted upon by the light, and thus protects the picture from further change by exposure to light. The negative picture thus obtained is rendered transparent by placing it between two sheets of blotting paper saturated with white wax, and passing a moderately heated smoothing-iron over the whole. It may then be used for printing *positive pictures*, by laying it on a sheet of paper prepared with chloride or iodide of silver, and exposing it to the sun."

(*To be continued.*)

SILVER LAKES FOR EMULSION PLATES.

BY M. CAREY LEA.

I HAVE lately been engaged in investigating a new method of preparing emulsions. The work is only yet in progress, but as the editors of the BULLETIN have asked me for a contribution to the first number of their new series, I send a brief description of what I have so far done.

The idea of staining the film is at present attracting a great deal of attention. Plates affirmed to be equally sensitive to all the colors of the spectrum are manufactured and sold in London, Paris and Berlin. It is understood that the film is dyed with reosine or some aniline coloring matter, and even a patent has been taken out.

This plan of dyeing the film is far from being a new one, and if I am not mistaken I was the first to advocate it sixteen years ago. In 1866 I made many experiments with red and yellow coloring matters in the film and found red litmus (litmus reddened by acetic acid) to give the best results. This method was published in full detail in the *British Journal* for 1866, and again in 1868.

It was long a favorite method of operating with me, and for years I used it exclusively in taking landscapes. The object I had in view was principally the prevention of blurring.

The next experiments on stained films were made by Major Waterhouse and by Dr. Vogel; the latter affirms that each color increases the sensitiveness of the plate to those rays which the coloring matter absorbs, subject to the condition that the coloring matter must be capable of combining with chlorine bromine and iodine, according as AgH, AgBr, or AgI is used.

The results obtained by myself were contradictory, and seemed as often to oppose the theory as support it.

Even Dr. Vogel's results are often in disaccord with his views. Indeed, it must be evident that coloring the film is liable to a serious objection when used for changing the sensitiveness of the film to particular rays, namely, that not only the particles of silver haloid, but also the film in which they rest, is colored.

These two agencies act in directly contrary ways; for the particle is placed in a color screen which tends to absorb the very rays to which it is intended to render the particle more sensitive.

Being desirous to find an explanation to these contradictions, I commenced a series of experiments, which resulted in showing:

1st. That the silver haloids are capable of entering into combination with many coloring matters very much in the same way that alumina does, though they are not so strongly colored. The combination is intimate; the color cannot be removed by washing. To effect this combination the haloid is precipitated and washed, and the coloring matter in solution is poured over it; the excess is then washed away, and the haloid remains permanently colored. Or when the dye does not form a precipitate with silver nitrate, it may be added first, and the the precipitate is then formed in its presence and combines with it. In this way the haloid may be obtained colored to any shade required, and may then be emulsified in pure gelatine. Or it may be emulsified, precipitated, colored, and re-emulsified.

2nd. The color imparted to the silver haloid is generally that of the coloring matter, but not invariably. Some blues dyed the silver salt lavender, and one specimen of methyl green colored Ag Br and Ag I pink.

3rd. The color imparted by any one dye to the three haloids is generally the same, but not always.

4th. Many coloring matters form these combinations, but there are also many that do not.

A moment's consideration will show that this last-mentioned fact is of vital importance. For suppose a coloring matter applied to the film which is not capable of combining with the silver salt; then, without influencing the silver salt directly, it *simply acts to obstruct the very rays whose effect it intended to increase.* The result, therefore, will be exactly the reverse of what was sought.

In this way I think the anomalies and contradictions observed find their explanation. The new method here described renders it possible to color the silver haloid and emulsify it afterwards, or, perhaps better, to emulsify, precipitate, apply the color, and then re-emulsify. I have already found the means in this way of greatly increasing sensitiveness. Blurring can be cured, and plates of the most varied sensitiveness to particular rays and colors can be produced.

Finally, it is clear that no color can directly influence the haloid unless it be amongst those that have the power of combining with it. Evidently this is the true criterion. The power to combine with chlorine, bromiue and iodine may cause the color to affect the general sensitiveness to light, but to modify that sensitiveness to particular rays the coloring matter must combine with the haloid.

CARDS.

AMONG the many and various requisites for the successful pursuit of the photographic art, cards are by no means of minor importance. Upon the quality of the card used in mounting it, may depend the beauty and permanence, and hence the value, of a photo upon which the artist has expended time, money, genius and work. The result of the most skillful and successful work of the camera, and the most careful and thorough manipulation of the dark room, may be imperilled, if not radically impaired, through the use of cards, in mounting, which, false at heart, as were the witches in "Macbeth,"

> "Keep the word of promise to the eye
> And break it to the hope."

For there are, as the French would phrase it, cards and cards; and the difference between them, lying beneath the surface, is not to be detected by inexpert purchasers, to whom it may be fraught with disastrous results if he make the wrong choice.

And in these days of sharp competition, when manufacturers are tempted to reduce quality in order to meet demand for low-priced goods, such purchasers are apt to be deceived, and to be led to purchase inferior stock, thinking they are securing *cheap* goods, when, in fact, the goods are simply low-priced, and in the end may prove to have been exceedingly dear at any price.

The purity of the paper and other material that enters into the structure of any card—not merely the paper upon the surface, but that which forms the body of the card—has much more to do with its fitness for photographic purposes than most photographers would suppose. We have known cases where the value of an entire batch of mounted pictures has been destroyed by chemical action engendered by some improper material used in fabricating the cards.

Now, these and other evils are not to be detected by the superficial examination of an inexpert purchaser, and they are evils liable to increase so long as photographers pursue the "cut-throat" policy of making low-priced pictures; because these low prices for pictures demand low-priced card mounts, and all manufacturers cannot be supposed to be as careful in the manipulation of inferior stock as of that which yields them a better return.

Our advice to photographers, therefore, is,—*keep up prices* for your work. To do this you must make good work, to reach that result you must have good material to work with; and to secure this with any degree of certainty you must use only the goods of well-known, long-established manufacturers, whose trade-mark is a guarantee of the quality of their product. Otherwise you may learn through sad experience in the use of low-priced goods, the force of Longfellow's line:

> "Things are not what they seem."

SITTERS.

BY ABRAHAM BOGARDUS.

WHAT a glorious thing it would be if all the writers on *developers* would tell the practical photographer how to suit his unreasonable sitters.

We have plenty of developers, but what does a lady "along in years" care about developers? In fact, she never heard of such a thing. She wants a pretty picture; she has been to —— and —— and —— yet she don't like any of the pictures. Now, suppose she comes to me, and I tell her I am using *Green's* developer to make her picture. She opens her eyes in wonder and says, "What is developer?" She knows as little about developer as a *cat knows about his grandfather*.

We have so many developers now it makes our heads swim. She wants a smooth, soft picture out of focus, not a line or wrinkle to show, eyes bright, nose straight, and a *rose-bud mouth;* developers won't do it. My negative may be perfect, splendidly developed; what have I accomplished when she coolly tells me the picture is *twenty years too old* and looks just like all the others?

Stand with me at the camera a few days and hear the unreasonable expectations and impossible demands, and you will make up your mind making a good picture is one thing and suiting your sitter quite another.

Tell us how to instruct the people, that they be aware of the *fact* "a properly executed photograph is a literal transfer of the face to the plate, with the exact expression of the face at the instant." The *perfect* picture they do not want; like Paddy, they want to be *flathered* a little.

Tell us how to develop the brains of sitters, and we shall be under everlasting obligations.

The photographer of to-day must be possessed of a great knowledge of human nature, see at a glance the best points of each face, have great judgment, skill, tact and *patience*—far, far more than is usually allotted to mortals, or he had better leave the business and go to making *dry plates*.

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PARAGRAPHIC PENCILLINGS.

BY G. H. LOOMIS,

First Local Secretary of the National Photographic Association.

I.—The books of our recently deceased friend, 1884, are closed. They have gone into history, and in some respects are extremely valuable for occasional reference; therefore don't destroy them. If they have been faithfully and methodically cared for as a record of daily transactions, they will in a review instruct you concerning your success or failure, whichever may be the result of your year's business. If you have been careless and indifferent in your memorandums, and inattentive to the details of your financial affairs, it is more than probable that the opening year will find you bewildered and half-crazy with the uncertainty of your situation.

The photographic business has hitherto been on the c. o. d. plan, very little, if any, credit being asked for or given—I mean, of course, between artist and customer—the small advance and the balance on delivery being the general practice. This rule, we presume, is now generally in force, with possibly few exceptions, and it should not be abandoned. Hence the average photographer ought to have his assets and liabilities, or the figures which represent them, in such direct focus that he can readily comprehend them. I am told, what I already inferred, that there is more or less looseness in the matter of meeting obligations at the stock houses, and that this is growing no better very fast. While I don't care to incur the penalty of minding that which is none of my business, I will venture the suggestion that it is unwise economy to tax the source of supply beyond a fair limit of endurance. While the landlord, the grocery man, the tailor and other inter-dependent parties should be regarded with due diligence, the stock dealer, by whose forbearance and favor the machinery is kept in running order, should certainly not be the last, if peradventure he is not the first, to be remembered by cash on account. It is certainly a good time about these days to indulge in considerate retrospect, look over the items, foot up the columns, and properly even up the measure of obligation—making about 100 cents on the dollar as the basis of adjustment. Then will your conscience be at ease, your mind at peace, and your creditors will rise up and call you blessed.

II.—The holiday trade, so far as the weather would permit, was an improvement on that of last year, when, as all will remember, the weather was a perfect extinguisher. At best we are inclined to think holiday business is not what it used to be, when the bewitching album was the leading gift book, and the filling of its pages the objective point of interest. And then, again, personal photograph presentation is too much of a deferred matter, especially if any time and labor is required to get in readiness for gift day.

Between the day of sitting and the time for completion, the sun may be obscured and the artist powerless to redeem his promises. It is difficult to educate people up to the measure of your wishes, however hard you may wish you could.

III.—We observe that one of the largest of our dry goods houses has gone into the prize-package picture business, which leads us to believe there is no end to the chain of Yankee expedients to make a dollar.

We have among us in this our modern Athens a leading photographer, one of your ten-dollar-a-dozen cabinet makers, basking in the Beacon Hill neighborhood, who has linked fortunes with the aforesaid dry goods emporium with an album department. Buying one of these nice-fitting albums will entitle the purchaser to a ten dollar sitting at the Park street studio for the sum of four dollars, being a discount of six dollars per dozen on regular orders. This arrangement has been well advertised and in operation for some weeks, but we have no report of the sales or its prospective effect upon the two concerns. And now it is rumored that the principal rival dry goods house, not wishing to be outdone, has effected an arrangement whereby every purchaser of a pair of corsets shall receive a check for a fifty-dollar life-size portrait, elegantly finished and framed, for $3.99. In case the applicant is a gentleman, and don't wear corsets, he is to receive instead a double back, self-acting shirt front, studded with celluloid pearls of the first water.

Some of the regular patrons, paying regular prices, are beginning to wonder why and how this is thus. We understand that those who have been paying ten dollars per dozen for cabinets think of suing for the six dollar rebate. *Moral:* "Consistency is a jewel"—when you find it.

IV.—Our own correspondent has informed us that the BULLETIN is to become a semi-monthly from and after this date. If that is so—and we guess it is—accept not only our New Year's kind wishes, but our cordial congratulations. This is the kind of competition and enterprise that looks healthy and if we may indulge in a little prophecy, it will be that at no very distant period the BULLETIN will "double up" again and become a weekly.

We would respectfully suggest a memorial column for our deceased friend, its founder, in which to republish some of the valuable articles relating to photography in its early stages of development. As the successor of Mr. Anthony in the editorial management, we shall welcome Professor Chandler, who will, no doubt, add new and fresh interest to the BULLETIN pages. Compliments of the season to both publishers and editors.

V.—Who is going to New Orleans to take note of the new and wonderful productions in our art department? A grand display no doubt is there, and for one we find it difficult to circumscribe the limit of our desires to the capacity of our exchequer. If, therefore, any one has a round trip ticket and no time to use it, we will modestly volunteer our services as a substitute. Of course, we shall not exact hotel accommodation, though we shall have to stay somewhere. We perceive our old friend (excuse the adjective) E. L. Wilson, of the P. P., is chief in charge of the Photographic Bureau, and no doubt his many friends and acquaintances from hereabouts would find him accessible and useful in showing the most desirable points of this great exposition of art and industry. Kind regards to Doctor E. L. Wilson, if we fail to meet him at New Orleans.

BOSTON, *Jan.* 1, 1885.

AN AMATEUR'S EXPERIENCE WITH LANTERN SLIDES.

AT this season of the year many amateurs in photography are spending odd times in the making of transparencies and enlargements.

The negatives of last summer's outing are carefully looked over, and the best or most suitable selected for the work.

Possessed of a sciopticon to display them, I have made a number of lantern slides, and after a series of experiments have met with general success. A few points discovered, not laid down in the books, I desire to give for the benefit of those about commencing this work. I have found the best light for contact printing is that coming from an ordinary student's lamp, protected by a plain porcelain shade. The time of exposure to this light should be increased somewhat over that laid down in the printed directions packed with plates. The frame containing negative and plate should be held stationary, at about twelve or fifteen inches from the lamp. Of course it is necessary, in order to make good slides, to have good negatives, and the best ones are those quite intense. Although these require longer exposure than those not so strong, yet they will produce more pleasing slides.

In the development, use judgment with regard to the intensity, according to the kind of light with which you expect to display them.

A slide that would be too dense for an oil light will be brought elegantly with a lime or oxy-hydrogen flame. This can easily be controlled after a little practice, particularly with the Anthony special plates—a longer development giving intensity without fear of fog, unless greatly over-exposed.

The satisfaction of showing upon the screen a picture eight or ten feet in diameter, the result of your own handiwork far more than repays for all the trouble and time in producing it, and I am sure this will be the experience of any who undertake it.

With many others, I hope our ingenious inventors and manufacturers will soon give us a suitable and practical frame for mounting lantern slides.

P. H. M.,
Mem. Soc. of Amateur Photographers, N. Y.

TRIBUTES.

IN our last issue of the BULLETIN we gave a short notice of the death of HENRY GREENWOOD, the well-known editor of the *British Journal of Photography.* It has occurred to us that the following correspondence may prove of interest to many of our friends and subscribers, having been received so short a time before the death of the writer:

20 ESPLANADE, WATERLOO,
Nov. 14, 1884.

MY DEAR SIRS :

I have duly received your "In Memoriam" card for the late Mr. H. T. Anthony.

As I have just lost my own dear wife, I am in feeling the more ready to sympathize with Mr. E. Anthony and his family in *their* bereavement. Although not personally acquainted with the late Mr. Anthony, the high estimation in which he was held, not only in America, but in Europe, for his great ability and the excellence and simplicity of his character in public and private life, had led me to possess a reverence and somewhat of an affection for him, totally different from that I held for other gentlemen long connected with the art-science on either continent. His sudden death, and the mode of it, must prove a great disaster and a sincere cause of grief to all connected with photography and the cognate arts and sciences.

Men of special ability are too few by far in either hemisphere. I speak the sincere words of an old friend, who yet had never seen the old friend whose untimely death is a *great* loss to science and a source of grief to his family and friends.

Again I ask you to accept my feeble but sincerest sympathy with Mr. E. Anthony and the other friends of the deceased in the eminent firm with which he was so long and inintimately connected.—I remain,

Yours ever faithfully,
HENRY GREENWOOD.

Messrs. E. & H. T. ANTHONY & CO.

We would only remark that we can fully appreciate the grief of those who have lost the friend with such a warm and sympathetic heart.

The following letter has been received from the little flower girl friend of the late Mr. H. T. Anthony, in answer to one telling her of the latter's decease :

RICHFIELD SPRINGS,
Nov. 9th, 1884.

MR. ANTHONY :

I was very sorry to hear of my dear friend's death. He was such a kind and generous gentleman. But he has gone to a better place than this earth, where he will be rewarded for all his good deeds, and will have no more suffering or sorrows. I was a little flower girl, and he always showed me so much kindness and seemed so much interested in my welfare, I appreciated it very much. If the kind gentleman had lived I would never have forgotten him with my flowers. But as the flowers that will greet him in heaven for all his good deeds will be much prettier than I would have sent him, he will appreciate them far more than those on earth that will wither and fade. But as he has gone, his memory will be ever fresh and green on my mind.

From his little friend,
MAGGIE BOLTON.

The following letter is added on account of the quaint style of the writer :

TUXPAN, MEXICO,
Dec. 1, 1884.

Messrs. E. & H. T. ANTHONY & CO., New York:

DEAR GENTLEMEN,—It is very natural to be sorry on the death of your Mr.

HENRY T. ANTHONY.

He was a perfect reporter of his existence daily; all heard from him by his admirable works; nearly all trades had a benefit by his constant studies.

The owner of Eternity loved him,
for he crowned him with
WISDOM and VIRTUE,

best heavenly gifts allowed to mankind.

The Lord will teach Henry's spirit to be in heaven as useful as he was on earth.

Gentlemen, in all your sorry thoughts I am with you.

Sincerely,
F. G. CARDOZO.

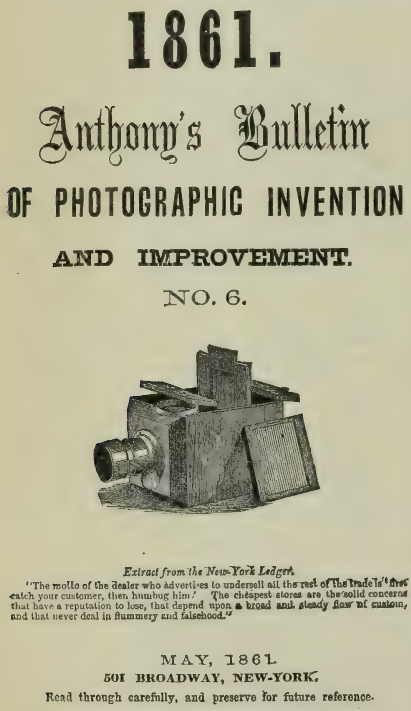
Such tributes to a good man's memory are always worth preserving.

In this connection we would remark that we consider ourselves particularly fortunate in securing the services of Prof. Chandler as editor of the BULLETIN. He was a firm friend of the late

Mr. H. T. Anthony, and worked with him in the advancement of photography. The defeat of the patent for working up old silver residues was due to the joint action of these two friends, and has saved the photographic fraternity hundreds of thousands of dollars.

THE BULLETIN:

ITS PAST, PRESENT AND FUTURE.



1861.

Anthony's Bulletin

OF PHOTOGRAPHIC INVENTION

AND IMPROVEMENT.

NO. 6.

Extract from the New-York Ledger.

"The motto of the dealer who advertises to undersell all the rest of the trade is 'first catch your customer, then humbug him.' The cheapest stores are the solid concerns that have a reputation to lose, that depend upon a broad and steady flow of custom, and that never deal in flummery and falsehood."

MAY, 1861.
501 BROADWAY, NEW-YORK.
Read through carefully, and preserve for future reference.

We give above a reproduction of the title-page of one of the early issues of the Bulletin. This publication at first appeared yearly, and was devoted to trade notices of such new inventions and improvements as appeared to deserve attention from the practical photographer.

In looking over the pages printed twenty-three years ago, one meets with some curious names that recall the early efforts of the pioneers of the photographic art. Those were the days of the Ambrotype, Daguerreotype and Melainotype. The operator then used Neillo paper, black varnish, plate vises, metallic mattings, preservers, and other devices only to be found now in the Museum of Applied Chemistry at the School of Mines, Columbia College. Shortly after the above date the Bulletin added to advertisements and trade notices a number of pages of instructive and useful information, culled mostly from European journals. These were found so desirable, and the pressure upon the yearly issue became so great, that it was decided to issue the Bulletin every month. The quantity and importance of this matter increased from year to year, until it became impossible to report everything of value and still retain the size of the journal. Last June the question of a weekly edition of the Bulletin was debated, and after careful discussion, and obtaining the advice of many friends, we concluded that it would be best to issue a semi-monthly, although we still have to use our condensing powers considerably. We think we can give our friends as much valuable matter every two weeks as they can digest in a fortnight. If our friends demand it, and do their part in the way of subscriptions, we shall issue the Bulletin weekly; but at present, and in our judgment, there is no such necessity, and we are not prepared to make it a weakly.

The line of investigation that will be pursued by the Bulletin *for the year* 1885 *will make it indispensable to all interested in photography, no matter to how many other publications they may subscribe.* Its trifling cost will be repaid ten-fold, and probably a hundred-fold, to every subscriber.

For the professional we shall have the thoughts and ideas of practical professional men. For the amateur we promise much useful and instructive matter from the pens of some of the most enthusiastic in their ranks.

We especially invite our friends and subscribers to write to us about the difficulties they encounter in the practical application of photography. Do not be afraid to ask us a question because it appears trivial and of small moment to you. There are hundreds, perhaps thousands, wishing an answer to the same question, and are losing heart because it is the bar to their success in the art. Tell us about your weak negatives, and we will tell you how to make strong ones. Give us an idea how you obtained a foggy plate, and we will inform you how to make clear ones. In fact, look upon us as your friends, and we will prove such by helping you out of your difficulties.

Although we propose to discuss those questions in photography that involve considerable scientific education, yet this is but one of our many functions. And it shall go hard with us if we do not make our journal suited to all, and of such a character that its teaching will be so plain and straightforward that

"He who runs may read."

◆

We take pleasure in acknowledging the receipt of a delicious "tree-cake" from the manufacturers of the celebrated N. P. A. paper. We wish we could give all our friends a taste of it, but that would take a cake as big as all New York. They must therefore take our word for it, that it is emphatically *good.*

◆

The advertisements in this issue contain a world of valuable reading. So much and so general photographic advertising has never been seen together before. The enterprise shown will no doubt meet its reward.

OFFER.

THERE ARE

THREE ANNUALS

That are indispensable to every one interested in photography :

The Year Book, by Thomas Bolas, F.C.S., editor of the London *Photographic News.* Price, 50 cts.

The British Journal Almanac, by W. B. Bolton, editor of the *British Journal of Photography.* Pricc, 50 cts.

The Mosaics, by E. L. Wilson. Price, 50 cts.

The Mosaics is ready, and the other two are on the way to us across the ocean.

To any one sending to us $2 for a year's subscription to the Bulletin, we will send either of the above free by mail.

To any one sending $4 for two subscriptions (self and friend), we will send all three of these annuals free by mail.

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The British Journal Almanac for 1885 contains 150 original articles of the highest practical value, by as many of the most noted men in the photographic world.

—

The Year Book will also be found replete with matter of permanent photographic interest, from the pens of the ablest and highest authorities connected with the art.

—

The Mosaics is always full of good things, and is particularly so in the present number.

—

The above should be secured promptly. A copy of the Year Book of 1884 cannot now be had, as the saying is, "for love nor money."

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In addition to the above, we will send to every subscriber for 1885 a copy of Dallmeyer's celebrated pamphlet, "On the Choice and Use of Photographic Lenses."

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THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

The following is the report of the society's "*Committee on Lenses:*"

Mr. President: As chairman of the Committee on Lenses, I have to report that we have been engaged for some time in studying the various lights which have been suggested, endeavoring to fix upon some one as a permanent standard.

We have been experimenting particularly with the electric spark as given out by a Voelter induction machine, which was kindly loaned to the society by Messrs. J. & H. Berge, the makers, 191 Greenwich street, New York. Our experiments resulted, however, in proving that the machine was not to be relied upon, especially when surrounded by a moist atmosphere.

We are now in consultation with Mr. Edison, who suggests on incandescent lamp of two or three volts capacity, and which we expect to receive during the present week. Mr. Edison is now preparing standard lights for the National Academy of Sciences, in consultation with Prof. Barker, of the University of Pennsylvania and chairman of the Committee on Standard Lights.

The lamp he proposes to furnish the society is similar in construction to those furnished to Prof. Barker.

(Signed) C. W. DEAN.

Committee on Lenses :

C. W. DEAN, *Chairman*,
Dr. JOHN H. JANEWAY,
JAMES B. METCALF.

A SPECIAL meeting of this society was held at their rooms, 1260 Broadway, on Tuesday evening, Dec. 23.

The meeting was called to order by the President at 8:06, forty-two members being present. The President read a letter from Mr. A. L. Henderson, of London, relative to the working of his emulsion formula as demonstrated before the society last Fall. In reply to some questions asked by a party who had been making his emulsions, he stated that the formula he gave would work well with most any developer ; that in case of granularity being shown, more gelatine should be added to the extent of double or treble the quantity stated ; that as the amount of ammonia will vary, its strength is of little importance, provided that a certain specified quantity of the silver solution be converted into ammonia nitrate, on the plan he suggests —that is, of dividing the nitrate of silver solution into two parts ; that he never uses more heat than is necessary to easily melt the gelatine; that greater rapidity will result if the emulsion is kept for a prolongrd time at a high temperature, especially if the bye-products are present ; that the leather-like toughness and appearance spoken of, after the emulsion has been precipitated, is right ; the two layers in which it forms are probably due to the silver bromide being heavier, thereby producing a denser layer at the bottom ; no harm results from such a formation. He remarks further that if the leather-like pellicle is left in cold water for a short time, it will soften and can be more easily worked, that is, torn into small pieces. He advises that an emulsion should be made at about 60 degrees F.; that it is not well to aim at too great rapidity ; that his formula will give rapidity enough for most purposes.

A letter was also read from Mr. George Bullock, of the Cincinnati Amateur Club, advocating the establishment of an exchange of lantern slides among amateur societies—a subject which is at present being agitated in England, where the proposition is to establish a "Lantern Club," composed entirely of those who devote themselves to slide-making.

A series of photographs lent by Dr. D. Bryson Delevan, of this city, showing the human larynx and vocal chords as they appear in "phonation," when sounding various notes of the musical scale, during respiration and as affected by morbid conditions, such as catarrh, &c., was then passed round. The photographs were taken by Thomas R. French, M.D., of Brooklyn. A paper on this subject by Dr. French, describing the method employed, can be found in the New York *Medical Journal* of Dec. 13.

Some landscapes printed on a peculiar green-toned paper were passed around for inspection by Mr. Walker, which had been sent by Messrs. Anthony & Co., and specimens were distributed at the close of the meeting. The effect of the green tone is seen in case of a view of which the sky forms a portion ; the blacks come out as usual, but the sky is brought out and made to appear less flat than is usually the case.

An ingenious snap-shutter was shown, the device of Mr. H. W. Kelly, an amateur of Fall River, Mass. It is intended to be placed back of tbe lens on the inside of camera. A plate of thin blackened brass with circular opening is fastened to the inside of lens board. To this a second smaller plate faced with velvet covering the aperture is hinged at the bottom. A spring coiled around the projecting axis of the hinge, and pressing against the second plate, tends to keep this in position over the opening. On the opposite side a small projecting arm is fixed to the second plate. By a very ingenious motion the free end of a coiled wire spring fastened to the first plate is forced under this projection and then released, causing the hinged plate to fly back through an angle of ninety degrees, thus uncovering the lens, when the force of the spring coiled around the axle, which has been compressed by the opening of the shutter, is exerted, and the shutter returns to its original position. There is a screw to regulate the tension of the axle spring, and this is also the handle by which the other spring is caught and released, and projects through the front board and is actuated from the outside of camera.

The motion of the shutter naturally gives more exposure to the foreground than to the sky, and the whole arrangement being compact, out of the way inside the camera and working without jars and with sufficient rapidity for ordinary purposes, seems to combine many desirable features. It was suggested by some members that there is no way of holding the shutter open while focussing, and that the location of the release on the front of box is inconvenient for one who stands back of the camera to sight a moving object. But these objections can doubtless be overcome and the improvements in question be made.

Mr. H. M. Grisdale, a member, showed an arrangement of his own to enable the transfer of plates from box to plate-holder, and *vice versa*, to be safely effected in any light or situation. Every amateur knows the difficulty of securing, when away from home, a perfectly dark place, especially in the day, time, for this operation. Mr. Grisdale's arrangement consists of a square bag about 20 x 15 x 12 inches, made of rubber cloth, with two sleeves for the introduction of box and holder, and to fasten around the arms and keep out the light when the arms are inserted. The bag is made flat and stiff by the introduction of a bottom made of strips of wood, fastened together by cloth, after the manner of table mats so often seen; this rolls up for carrying, and after being introduced through one of the sleeves, is kept extended by two strips of wood along the sides at right angles to the cross-strips, being pivoted at one end. Cords are sewn into the corners of the bag, emerging at the top and meeting in the centre. These are kept extended by two light sticks pivoted together in the form of an X; the whole is then suspended by a cord from any convenient point; a gas bracket or a door in the house, a wall or the limb of a tree, or even the tripod, out of doors, afford ready support. By introducing the hands through the sleeves, the change of plates can be safely effected even in broad daylight, and one is relieved of the necessity of taking when on a journey either a lot of holders or a changing box. The whole apparatus rolls up in convenient form, and is light and easily carried, and met the approbation of the members, who appreciated its practical utility. Mr. Grisdale himself uses it in his work altogether.

Mr. Beach then gave the Cooper formula for soda developer in a form slightly modified from that presented at the recent meeting of the Photo Section.

No. 1.	Sulphite soda crystals	1 lb.
	Distilled water	2 qts.
	Pyrogallic acid	2 ozs.
No. 2.	Crystallized carbonate of soda	½ lb.
	Water	2 qts.

To develope, take of No. 1, 2 ozs.; No. 2, 2 ozs.; water, 2ozs. For restraining over exposure, use to above quantities of developer.

½ to 1 dram of bromide potassium.	1 oz
Water	6 oz.

Where very rapid shutter pictures are to be developed place such plate previous to development in the following solution:

Crystallized carbonate soda	10 grs.
Water	1 oz.

and proceed with the usual development for about 30 seconds, after which wash for the ame time.

Mr. Beach further remarked that he had seen some excellent bromo-argentic enlargements made by Mr. Rockwood, and had learned that they had been developed with the following simple formula:

No. 1.	Sulphite soda (crystals)	4 ozs.
	Sal soda	4 ozs.
	Water	3 ozs.*
No. 2.	Water	6 ozs.
	Sulphuric acid	10 minims.
	Pyro	1 oz. (437 grains.)

To 6 ozs. of water 1½ ozs. of No. 1 were added and 1½ drams of No. 2. If development was too slow, more of No. 1 was added The resulting tone was a deep gray resembling a crayon picture.

Mr. Beach then called attention to the frames of photographs forming the exhibit of the society as prepared for shipment to the New Orleans Exposition. These are five in number, four of them the property of the society, the fifth a very rich gold frame kindly loaned by Mr. R. A. C. Smith. The photographs number 73, and are all the work of members, and of fine quality. They have been very artistically arranged and framed by Mr. C. A. Needham.

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* Water appears too small in quantity perhaps 8 ozs. is meant.—Editor of BULLETIN.

A frame of Adirondack views by Mr. Geo. H. Johnson, of Bridgeport, Ct., accompanies the society's exhibit, and a special frame of portraits taken in an ordinacy room by Mr. Samuel S. Santord, of Bridgeport, Ct., one of the members, is also expected; as well as frames containing 24 lantern slides by Mr. J. E. Brush.

This society will have the largest exhibit of any amateur organization at the exposition.

Mr. J. E. Brush was then called upon by the President, and showed the members his method of making lantern slides; this he does usually by contract. His negatives are 5 x 7 and taken with reference to being used for slides. His deep printing frame is arranged with a half of a plate-holder fastened over the face, so that the exposure to the source of light can be made by drawing the slide, the negative having been placed in the printing frame. A cut-out mat of the exact size of a lantern mat is used in selecting the portion of negative to be utilized, and by marks on the edge of negative the plate is so placed as to cover the part of negative selected. The back of printing frame is then fastened in, the printing frame placed in position at a fixed distance from the source of light and the slide drawn to give an exposure regulated by the density of negative and brilliancy and distance of the source of light. Mr. Brush recommends a "student lamp." The plate is then placed in water and afterward developed in the usual way, the only difference being in the clearing solution, which he makes as follows:

Alum........................	160 grs.
Water........................	5 oz.
Sulphuric acid................	1 dram.

Mr. Brush was disappointed in the working of an improved developer for positives which he is at present engaged upon, and hopes to announce it later. He showed a frame of slides developed with this formula of very high quality. His paper was listened to with great interest by the members.

Mr. Beach then proceeded to make an enlargement on argentic bromide paper by the use of the incandescent platinum gas lamp, deferred from the last meeting.

By the aid of this lamp and the fine 6½*e* inch Ross condenser belonging to the society, the head, 1½ inches in diameter, of a 5 x 8 portrait negative was successfully enlarged to life-size, the exposure (1½ minutes) being made in the dark room, and the development effected outside before the society. This method proved the most expeditious and practical of the three suggested by Mr. Beach, and it is to be recommended wherever it can conveniently be arranged for simplicity and effectiveness. The image was focussed on the improved stand and ground glass screen which had been presented to the society by Mr. H. V. Pursell.

Mr. Sanford showed two specimens of portraits taken in an ordinary room, which were of beautiful quality. The meeting was then adjourned.

At the regular meeting in January Mr. J. Traill Taylor will give his lecturette on photographic lenses.

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THE ROCHESTER PHOTOGRAPHIC ASSOCIATION.

THE Rochester Photographic Association, at their meeting held Dec. 15th, discussed the question, "What developer gives the best negative?"

Mr. Inglis desired to substitute as the subject for discussion the following: "What constitutes one developer better than another?" which was agreed to.

Mr. Wardlaw—My opinion is that it is the best printing negative which shows what is the best developer.

Mr. Inglis—You do not take into consideration the time consumed in bringing the negative to that state, nor the expense?

Mr. Wardlaw—Yes; that which is the best developer, irrespective of cost and everything else.

Mr. Lee—I understand the question to be, which is the best general developer for dry plates; that is, what developer would give the best results? My experience is that it is plain pyro. and ammonia.

Mr. Inglis asked why?

Mr. Lee—Because I can obtain as good a quality of negative with it as with any other, and as far as economy is concerned, I think it is as cheap.

Mr. Mawdsley stated that other means of making alkaline are better in some cases. I find that pyro. and ammonia is the best developer in my experience.

Mr. Lee—I have heard a great many things said in favor of pyro. and alkali and oxlate, but in my experience I can do better with the old Edwards formula, and I find it produces a better negative than with any of the new ones.

Mr. Inglis—In discussing this question, we may all differ and contradict each other, but still we may be in the best of harmony. I never yet saw such a contradiction as there is in dry plates, but I find it is an apparent contradiction, and can be easily harmonized; that which is good for one thing under certain circumstances, is very bad for another under other circumstances, and we are all speaking of things as we have found them. Now, to put a little spice into the question under discussion, I have found the potash and soda developer far better than the ammonia.

Mr. Lee—I would like to ask Mr. Inglis if he can develop a plate which is a little undertimed, and obtain as good a negative as he can with pyro. and ammonia?

Mr. Inglis—In my experience I have obtained one much better.

Mr. Lee—I have not been able to develop with soda and get a negative if at all undertimed.

Mr. Inglis—I will give my reasons why I prefer potash and soda to ammonia. I have used ammonia and thought it was exceedingly good, and nothing could be better. If I have an under-timed negative, I find that with the potash and soda I can bring it forward gradually, but with the ammonia it seems to come to an end at once.

Mr. Lee—In my experience, when my negative is fixed, it would be very dense and hard, and would be a slow printing negative with a soda developer, after carrying it as you say.

Mr. Wardlaw—I have used plates that have been recommended to be used with the soda developer, and showed a trace of green fog or film, it developed hard, but there was so little of it that it did not appear at all in the printing. I obtained much nicer high lights than I did with the potash developer.

Mr. Dumont—I have used the potash developer, and the high lights seemed to come up all at once. I did not get the gradation that I did with ammonia or the Edwards developer.

Mr. Inglis—That may be. I know a brand of plates that the soda developer is recommended to be used with, but I found it did not work well; they would become a dense white. I will admit that I am perfectly unable to make every batch of emulsion alike. I obtain them in a general way; there is considerable range between each kind; one batch will be better with ammonia and one with another alkali. If I could only tell the photographer to modify his developer in such and such a way, and he would obtain much better results than as I have printed upon the box, but not being able to do that, it has to go and bear its own fruits, whether good or bad.

Mr. Wardlaw—I suppose then that I am perfectly safe in using ammonia on all plates?

Mr. Inglis—I think ammonia will give good results on all plates that are offered for sale.

Mr. Wardlaw—In using the ammonia developer on an under-timed negative, I would use less of the bromide solution, and when I got enough detail, instead of adding pyro. I would add a little bromide and get the strength, and in that way, if I found the green fog coming on, I would use a smaller quantity of ammonia.

Mr. Inglis—That shows the beauty of the dry plate process; one man can take the ammonia and work it to his satisfaction, and another can use these other developers. It shows what a latitude there is in the dry plate process, and how much photographers have in their hands to produce good work.

Mr. Wardlaw—I think there is no question at all of the superiority of the dry plates.

Mr. Inglis—While it shows that, it indicates how necessary it is for a photographer to use his brains in manipulating dry plates, because from what I have already said the manipulation of one plate is the ruination of another. The photographer, I am afraid, will be very apt to throw the blame upon the plate, whereas it is in himself in not manipulating the developer to the particular kind of plate.

Mr. Pomeroy—As far as my experience has gone I prefer the potash developer. I think that Mr. Inglis is right, what will work well with one plate will not work with another.

Mr. Inglis—After you have sifted this all out the best developer is the one that will give the best results.

Mr. Larned—I think that could be decided in the same manner as the make of plates. I think it shows that all of us are speaking of a developer in conjunction with different grades of plates.

Mr. Wardlaw—I stick to ammonia for all brands of plates, and find I can do better with it. There are other things besides time to be considered; there is the developer which will give you the proper light on your negative the same as that which you see on your ground glass. The best developer for me is the one which produces the same effect on the plate as it does on the ground glass.

Mr. Dumont—I am accustomed to the ammonia developer and obtain the best success with it.

Mr. Bannister—My experience has been rather limited. I have always preferred the ammonia developer.

Mr. Larned—I think those who use a particular developer are prejudiced against the others, and will not give a fair test to the opposing ones.

Mr. Inglis—It evident that preponderance of evidence is in favor of ammonia, but I think those who are in favor of it have been more accustomed to it. I have tried the ammonia, prejudiced in its favor as against potash, and therefore I am the best one to pass judgment upon it. I was in favor of ammonia, and it was very much against my will, or desire rather, that I changed from ammonia to potash. I did a few weeks ago endeavor to make myself see better results from ammonia than I had from potash, but I failed to do so, and therefore became doubly satisfied that potash was the best, and my advice to you all is to try it.

Mr. Wardlaw—I was prejudiced against the ammonia developer and in favor of potash and soda, because I could keep my hands cleaner.

Mr. Inglis—You mentioned soda; I did say that I found the quality that I liked in the soda developer, which was the density, but in obtaining that I lost the fine delicacy that I got with the potash, and when you come to the final finish of a negative that is the thing which makes it superior to another.

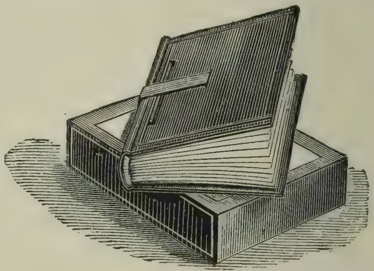
FOREIGN NOTES.

[FROM OUR LONDON CORRESPONDENT.]

Dullness of the Times.—Things are very quiet just now in the photographic world, at any rate in the business (professional) part of it, and proprietors of studios in the best London neighborhoods are complaining that nothing is doing. Many have sent off several of their assistants. Some few portrait studios are actually closed. Still there is an active aspect in the photographic world; that is to say, among the amateurs and the experimenters. The meetings of the societies are well attended, and despite the somewhat dull weather the amateur still takes his camera afield.

A Plate Book or a Plate Box.—How to carry plates on one's photographic journeys is one of the minor problems of the time among both amateurs and professionals; and the old-fashioned plate box with wooden grooves is pretty generally looked upon as one of the worst methods, as, unless very effectual means are taken to prevent the jolting of the glasses, they may become covered over with innumerable particles of sawdust. Not only does this obstruct the light and cause white spots on the developed films, but long contact with the wood often destroys the sensitiveness of the films, so that spots may result even if care be taken to dust the plates immediately before putting them into the slide.

According to Mr. Russell Steele, a well-known and active amateur, the plate book has all the advantages and none of the disadvantages of other methods of carrying out plates, and I subjoin a drawing of the latest form of plate book as made by Messrs. Sands & Hunter:



The leaves are of thickest cardboard, and edged with strips sufficiently thick to allow for the substance of the glass, and an indiarubber band is provided, which, when turned over the front of the book, keeps all tight; while, as a further protection, the book fits into a case as shown.

The plate book is by no means a new inven, tion, as I find a description of it, and also a drawing, in a volume of the *Photographic News* over twenty-five years old (Vol. II, page 58), but it appears to be one of those good things which have been neglected. Scott Archer, the originator of collodion photography, used to take moist plates into the field in a plate book, but the book consisted of a series of carriers with wire corners, bound up in book form.

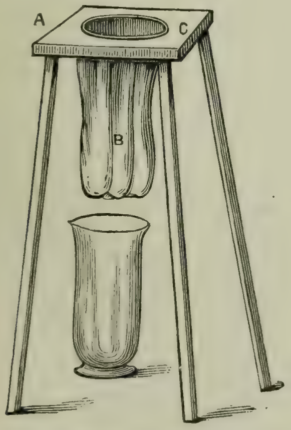
Standard Light for Testing Plates.—Photographers in England generally test their plates for rapidity before putting them into stock, and up to now the phosphorescent tablet of Mr. Warnerke has been very generally used as a standard light for the purpose, but Captain Abney has recently pointed out the advantages of Siemens' (or rather Hefner Altneck's) unite lamp for this purpose. The unite lamp is made something like a spirit lamp, and the fuel burned is acetate of amyl, or the so-called essence of jargonnelle pear. If the wick-holder is $\frac{5}{16}$ of an inch in diameter and the wick is so adjusted as to give a flame precisely two inches and six-tenths high, the light given is equal to one standard candle. No variation sufficiently great to be of importance to the photographer takes place. Experiments were made with various other substances in the same lamp, and the results obtained are given in the following table:

	Light.	Seconds required to burn 1 gram.
Amyl valerate ..	1.03 ..	436
Amyl acetate (pure) ..	1.00 ..	388
Amyl acetate (com.) ..	1.00 ..	388
Amyl formiate ..	1.01 .	372
Isobutyl acetate ..	99 ..	373
Isobutyl formiate ..	97 ..	355
Ethyl acetate ..	1.24 ..	212

It may be remarked that amyl acetate boils at 138.6, and is not explosive.

The employment of commercial instead of pure amyl acetate, the replacement of a hard spun wick by a soft one, and the mode of trimming the wick, do not appear to materially affect the luminosity of the flame.

An Appliance for Filtering Gelatinous Mixtures.—A very convenient and simple arrangement for this purpose has been described in the *Photographic News* by Colonel Noverre, and although the appliance is not one of the "great invention" order, it is a really useful apparatus for every-day work. A C, in the subjoined diagram, is a kind of stool, having a round hole cut in the seat, and the filtering material, which should consist of cambric or linen of the closest texture, is not sewed in such a way as to form a stocking or long bag, but the edges of a circular piece of material are secured to a cane ring (shown at the top of the figure) by means of thread, the cane ring being a trifle larger than the hole in the stool, in order that the bag may not fall through. The arrangement in question gives a great deal of filtering surface, and, if needful, the filtration of a viscous fluid may be expedited by grasping the upper part of the bag with one hand and squeezing the liquid through by pressure with the other hand.



A Photographic Hat.—M. Mendoza, of Paris, has constructed a hat-camera, the lens being at the top where the ventilator is usually placed, and the camera proper is inside. The plates are of necessity small—in fact, only a trifle over an inch square—but some passable pictures have been secured under trying circumstances; and one can well imagine that some curious photographic studies might be obtained with the apparatus. It is suggested that one might secure interesting pictures in a court of justice with the Mendoza camera, and perhaps some might take it to church and secure portraits of the minister and congregation.

Orthochromatic Plates.—There is a raid just now about the making of plates proportionately sensitive to all colors by means of dye-stuffs or staining materials, and Dr. Eder finds that all those mentioned below are sensitizers for the extreme red end of the spectrum: iodine green, bromeosine, iodeosine, erythrosin, pyrosin, aureosine, ethyleosine, methyleosine, phloxin, rose-Bengal, cyanosin, hydrochlorate of rosaniline, acetate of rosaniline, Coupier's toluidine-red, bitter-almond-oil green, brilliant green, methyl green, picrate of methyl green, aldehyde green, Hoffman's violet, dahlia, methyl violet, Paris violet, benzyl-rosaniline violet, gentian violet *B*, gentian violet *B R*, resorcin blue, fluorescin, iodcyanine, chlor-cyanine, cyanine sulphate, cyanine nitrate, Coupier's blue, red coralline, naphthaline red.

Dr. Eder has been successful in taking excellent photographs of oil paintings on gelatino-bromide plates prepared with each one of the above coloring matters—the whole color scale being properly reproduced in each case. He prefers to call such plates orthochromatic rather than isochromatic, as the term "isochromatic" is used in quite a different sense by opticians.

Making Vitrified Photographs on Glass or on Enamel.—Some interesting particulars of a visit to the photo-enamel works of Mr. White, of Chingford, are given in the *Photographic News*, and I will give, as shortly as possible, the mode of working the enamel process.

A glass plate is very carefully cleaned and collodionised after it is placed on a leveling stand and flooded with a sensitive mixture such as the following:

Water	100 parts
Moist sugar	10 "
Gum-arabic	10 "
Bichromate of ammonium	4 "

and after having been drained, it is set up on one edge to dry.

The drying cupboard used stands on a tin water vessel, scarcely two inches deep, and about two feet wide by five feet long, the whole being closed, excepting that a pipe is provided, by which any vapor may escape. The wooden bottom of the drying-box stands directly upon the top of the hot plate or water bath, and the front of the box is merely closed by means of a curtain. As the plates are coated, they are reared up on edge in the cupboard, and allowed to remain until quite dry, when they are ready for exposure in the printing frame. Mr. White says that much depends upon care in drying, and that many fail in the working of the dusting-on process through drying the plates at too high a temperature; indeed, he tells us that in warm weather he very often uses no artificial heat at all. The large flat water bath or hot plate upon which the cupboard stands is kept sufficiently warm by one paraffin heater with a four-inch wick, and turned down very low. The special advantage of the hot-water plate is that it ensures a uniform heat all through the bath.

The exposure is made under a transparent positive, and the greatest care must be exercised to see that printing frames and transparencies are perfectly dry; indeed, it is generally considered advisable even to slightly warm them before use. More than this, Mr. White uses an apparatus somewhat resembling a gardner's forcing frame, and providedwith a heating arrangement consisting of a battery of paraffin lamps. This is where the printing frames are placed during damp weather, and without some such arrangement for keeping them perfectly dry, the work would be very uncertain. The exposure required is not a very prolonged one, a single minute in bright sunshine being often sufficient, while in dull daylight half an hour or more may be required. No actinometer is used, it being easy for one who is constantly at the work to judge the exposures with sufficient accuracy. The effect of exposure to light is to destroy the power of absorbing moisture which the sugar and gum ordinarily possess; consequently, when the plate is withdrawn from the printing frame and exposed to damp air for a few minutes, those portions which have been protected from the action of the light will hold the vitrifiable pigment which is now dusted over the plate, while the most exposed parts refuse to take up any pigment, because they do not become adhesive by the absorption of water. For dusting with the vitrifiable pigment—which is just such a powder color as potters use in decorating their goods—the plate is laid in a tin dish, and the powder is dusted over with a broad camel's-hair brush. If the image is very slow to appear, one may venture to breathe very cautiously on the plate, after which the enamel color is again applied. A little consideration will show that in this process over-exposure results in a hard image, while fog or general tinting is a consequence of under-exposure. When a perfect picture, having all the gradations of the original, is obtained, the excess of pigment is brushed off, and the powder color is fixed by flowing collodion over the plate. If the plate were now fired, the chromium compounds in the film would become vitrified, and would give a disagreeable green tint to the picture, so some means of ensuring their removal must be adopted.

Some means must be adopted to remove the soluble chromium compound after dusting; and after the plates, have been again collodionised the removal of the chromium may be effected by soaking for half an hour or so in a two per cent. solution of caustic potash. After rinsing in water the plate is now ready for the final operation, that of vitrifying the image. The burning in, however, may either take place on the original plate or the image may be transferred: in the latter case the original plate is soaked in water made sour with nitric acid, until the film can be detached, after which it is floated on to the fresh plate.

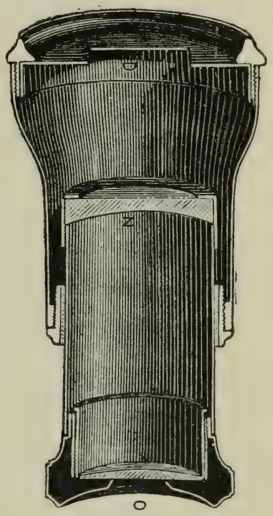
In the furnace room, there are four cast-iron muffles along the side opposite to the door and windows.

Three of the muffles are large ones, and each has runners for taking twelve iron plates, each of these plates being large enough to carry a piece of glass thirteen inches square. The first step in working is to draw down the blinds—which, by the bye, are black—and to make the room darker than many a so-called "dark room." This is to enable the worker to judge of the heat, as it would be quite impossible to form any notion if daylight were admitted. Each plate to be fired, whether porcelain or glass, lies on an even bed of whiting, about a quarter of an inch thick; this whiting being spread on the cast-iron plates that slide into the muffles, and in every case the bed of whiting is carefully leveled by means of a thick slab of plate-glass provided with a handle. To put the iron plates bearing on the sheets of glass directly in the hot muffle would be quite out of the question, so Mr. White has arranged a set of paraffin stoves, one for each iron plate. All these are placed in a row, each one towards the left being turned up a little higher than its neighbor on the right. When an iron plate, with its bed of whiting and sheet of glass, has been heated to the full power of the first stove, it is moved to the next, and so on until it is sufficiently heated to be placed in the muffle without danger of fracture. When the muffle is fully charged, it is closed with a heavy iron door, upon which are two tubular pieces which project forwards and fit into corresponding openings in the outer door of the furnace. When this outer door is closed, the flames can circulate all round the muffle, but cannot reach the interior. Still, in the case of color work, Mr. White finds mischief to result from the sulphur of the coal, so he has put himself to some pains to arrange for the ventilation of the muffles by means of tubes leading from the upper part into the open air. The firing does not take long, but the cooling is a slow process, as, if the glass is rapidly cooled, it is so liable to break as to be useless; indeed, two charges a week, or at most three, are as much as can be fired if the plates are properly annealed.

A Printing Paper for Dull Weather.—Messrs. Marion & Co. have introduced a paper which appears to be prepared with a gelatine emulsion containing both chloride and bromide, and when developed with a ferrous oxalate developer, it gives pictures having a very pleasant warm tone, and, moreover, this tone can be controlled and modified in an ordinary gold toning bath. Considering that at most an exposure of a few seconds is sufficient with the paper in question, it is probable it will come largely into use; indeed, it is surprising that no one has introduced a paper of this character into the market before now.

Rossignol's Iconometer or View Meter.—How much time is wasted by the photographic tourist in trying lens after lens on his camera in order to find which will give him the most pleasing view. Among all the various forms of iconometer, or view meter, which have been introduced, none appear to possess so many points of advantage as that of M. Rossignol.

It has the external form of a single opera-glass, but the arrangement of the lenses is reversed, O being a convex lens, and N a concave lens; this arrangement serving to present a diminished image of the landscape to the eye of the observer.



In order that the landscape, as seen through the iconometer, may correspond to that included on the sensitive plate, a metal screen having a rectangular aperture of suitable proportions is fixed at the large end of the instrument, D; and by sliding the lens-carrying portion in or out, a position can be found corresponding to each lens carried. These positions must be determined and marked by the user on the tube of the instrument.

When a screen proportionate to the dimensions of the plate has been adjusted to the open end of the iconometer, a mere inspection of the scale at the side of the instrument will show at a glance which lens to use, in order to include as much of the view as corresponds to the position of the slide. M. Rossignol finds that by making one of the glasses of a bluish tint that the eye is relieved, and it is easier to form a judgment as to how the view will look when reproduced by the camera in monochrome.

Exhibitions.—Two photographic exhibitions have lately taken place over here—that of the Newcastle Society, in which only members of the society competed, and a much larger affair at Dublin. At Newastle some admirable landscape work was shown, the silver medal being awarded to Mr. Gibson, of Hexham; but very little portrait work was shown. In the case of the Dublin exhibition, however, portraiture formed a leading part of the show—if, indeed, it was not the most striking feature. Dublin has two leading portraitists, Messrs. Chancellor and Lafayette. Both these gentlemen exhibited and were rewarded with medals.

The Club System in St. Petersburg.—In order to meet the dullness of the times, a Russian photographer on the Nevski-prospect has introduced a kind of cash-in-advance club system, which appears to work very satisfactorily. A sum equivalent to £3 sterling (let us say 15 dollars) is paid down, and this entitles the customer to have one dozen cabinets made on six occasions during the year; but the subscriber may transfer his right to be taken on either or all of the occasions. It is thus an economical arrangement for the father of a family to subscribe, and it serves the purpose of the photographer, as he secures the custom. If more than one person is to he taken on the same plate there is an extra charge.

A Citro-Chloride Collodion Emulsion.—It is known that very beautiful results may be obtained by printing on a collodio-chloride emulsion containing a citrate, and Capt. Abney has recently given a formula in the *Photographic News* for preparing such an emulsion. The emulsion may be used on plain or opal glass, or an enamel paper may be coated with it. The operations after exposure are carried on just in the same way as in making prints on albumenised paper (washing, toning, fixing and washing). Capt. Abney's directions for making the emulsion are as follows:

Take ten grains of pyroxyline and cover it with half an ounce of alcohol in which twenty grains of citric acid is dissolved, and then add one ounce of ether. This forms collodion containing citric acid. In order to get citrate of ammonia into the collodion in a very fine state of emulsion, ammonia (gas) dissolved in alcohol is added to the collodion. This is effected by inserting a bent tube in a cork in a test tube, which is a quarter filled with liquor ammonia. Placing this in warm water—in fact, nearly boiling water—the ammonia is given off rapidly, and can be made to pass through alcohol contained in another test tube. The alcohol absorbs the ammonia and takes up a large proportion of gas, as those who use sal-volatile may be aware.

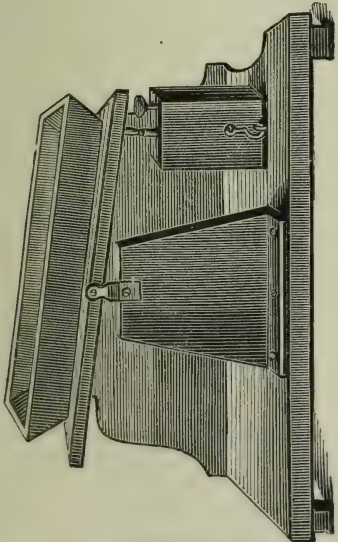
This ammoniacal alcohol is next added to the collodion containing the citric acid, little by little, with shaking and stirring, and sufficient is added till reddened litmus paper shows a very slight trace of alkalinity. A very fine emulsion of citrate of ammonia is thus formed, the grain of which is indistinguishable by the naked eye, and, like other emulsions when first mixed, is orange-colored when spread upon a glass plate. The emulsion is again rendered slightly acid by the addition of a few drops of a solution of citric acid in alcohol. If an emulsion of citrate of silver be required, there are two ways of effecting it—one by dissolving (say) ten grains of silver citrate in the least possible quantity of water, to which is added one dram of alcohol, and gradually dropping it into the collodion containing the citrate. It sometimes happens that this gives a granular emulsion. If, however, the silver nitrate be coarsely powdered and added to the emulsion, a very fine emulsion of nitrate of silver is produced by shaking. This may be washed in the usual way, or may be precipitated by pouring in a fine stream into water. Another method of forming the citrate of silver is to pour out the emulsion of citrate of ammonia into a flat dish, and when well set, to cover it with a solution of silver nitrate. It is then drained from the silver, washed and dried as usual. When re-dissolved, the emulsified citrate of silver should be excessively fine.

To prepare a collodio-citro-chloride emulsion, two plans may be adopted: either to dissolve twenty grains of dry calcium chloride in a small amount of alcohol, and add it to the citrate of ammonia emulsion, and then to add 80 grains of silver nitrate to it in the usual way. What I prefer, however, is to make a collodio-chloride emulsion separately, and then to mix the citrate of silver emulsion with it, according to taste.

To make a pure collodio chloride emulsion, I dissolve twenty grains of calcium chloride in half on ounce of alcohol; add to it five grains of pyroxyline, and then half an ounce of ether. To one ounce of plain collodion made similarly I add sixty grains of silver nitrate dissolved in the smallest quantity of water, to which is added one dram of warm alcohol. This produces an emulsion of silver nitrate in the collodion. To this the chlorized collodion is added drop by drop with stirring or with shaking in a bottle, and a perfect emulsion of silver chloride should result. This can be poured out to set in a dish as usual, and washed, dried and re-dissolved; or can at once be poured out in a fine stream into a large bulk of water, squeezed, soaked in alcohol twice, wringing out in a cloth all excess of alcohol each time. It can then be re-dissolved in the one ounce of ether and one of alcohol, and should give a good emulsion. The two emulsions may then be mixed together as before stated. It is well to dissolve about five grains of silver nitrate in water and alcohol, and add to the emulsion, in order to increase the rapidity of printing.

I propose to refer to the printing and toning of collodio-citro-chloride in a subsequent communication.

A Rocking Tray.—The rocking tray may often be useful in the photographic laboratory, not only for quickly washing a gelatine plate—but also for etching a zinc block—and, moreover it may be in some cases a useful aid in development. The apparatus devised by M. Leon Baluze, of Paris, and which is represented below, is very convenient in action and can be set to work very slowly or rapidly. The clock-work which drives it is contained in the box shown at the right-hand side of the engraving.



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The line of investigation that will be pursued by the BULLETIN for the year 1885 will make it indispensable to all interested in photography, no matter to how many other publications they may subscribe.

Its trifling cost will be repaid tenfold, and probably a hundred-fold, to every subscriber.

COOPER'S DEVELOPER.

BY JAMES INGLIS.

Rochester, N. Y.

I HAVE changed from one developer to another, until at present I am most in love with the one published by Mr. Cooper, as recommended for the Eastman plate. I find it as quick in development as the ammonia developer I used a year ago, with a much greater latitude in case of a shorter or longer exposure; also for thinness and density of the negative. The difference I find, which makes me prefer it to the potash developer published as Hoover's, and sent out with my plates, is its greater rapidity in development and greater strength given to the negative.

I prefer to make it up dilute enough at once to use equal parts without having to go to the trouble and time of measuring it out to add to so much water.

No. 1.—	Pyro	1 ounce.
	Sulphite of soda	4 "
	Hot water	48 "
No. 2.—	Washing soda	4 ounces.
	Hot water	48 "

Use equal parts to develop with, and to gain more density add a drop or two of a twelve-grain solution of bromide of ammonium. Very little of the bromide solution will make a great difference in the action of the developer. A little longer exposure will be required when any bromide is used. If a plate should show any trace of fog lengthen the exposure and use less of the soda and a little more of the bromide; and it will be a very bad plate, and one that should never have been coated, if this will not give clear negatives. I would recommend keeping the developer at from 80° to 90° in the winter. No fear of frill or softening of the film.—*Photographic Mosaics.*

MY DEVELOPER.

BY WILLIAM M'COMB.

Muskegon, Mich.

SINCE writing for the *Mosaics* last I have become a convert to the pyro-developer. have tried nearly every formula published, and have found that the Cooper developer is the simplest and the best that I have used. It is prepared as follows:

No. 1.—	Sulphite of soda	½ pound.
	Pure water	2 quarts.
	Pyrogallic acid	2 ounces.
No. 2.—	Car. of soda, pure, crys.	½ pound.
	Water	2 quarts.

To develop, take

No. 1	2 ounces.
" 2	2 "
Water	2 "

You can use it with equal success with the "Eastman's Special," "St. Louis," "Cramer," "Carbutts" or the "Inglis" dry plates.

The developer can be used until it turns a dark color.

For fixing I use the following: Put three pounds of hypo. soda in a gallon bottle, nearly fill with water; after the hypo. is dissolved add four ounces of chrome alum solution. After it settles it can be used.

The chrome solution is prepared as follows:

Chrome alum	1 pound.
Water	5 pints.

The chrome alum will impart a greenish color to the fixing bath.

With the above developer and fixing bath I have no trouble with fog or frilling.

It cost me considerable time and trouble experimenting before finally fixing on the above as the most certain and satisfactory in result, and I feel certain that those who try it will not use any other.—*Photographic Mosaics.*

Since the foregoing articles were in type we have received the following important note from Mr. Cooper:

"Since the publication of these articleles have made an important improvement in my formula by the increase of the proportion of sodium sulphate to just double the quantity formerly recommended. The revised formula will be found annexed.

It will be noticed that I have there given some instructions for developing extremely rapid exposures. I would say to rapid workers, do not disregard this hint. It is valuable and based on a sound principle, which can be readily demonstrated by practical test.

"DAVID COOPER."

COOPER'S SODA DEVELOPER,

For Eastman's Plates.

No. 1.	Sodium sulphite crystals	1 lb.
	Distilled water	2 qts.
	Anthony's Pyrogallic acid	2 oz.
No. 2.	Crystallized carbonate of soda	½ lb.
	Water	2 qts.

To develope, take:

No. 1	2 oz.
No. 2	2 "
Water	2 "

For restraining over-exposure, use to the above quantity of developer, one-half to one dram of

Bromide potassium	1 oz.
Water	6 "

Where evry rapid shutter pictures are to be developed, place each plate previously to development in a solution of—

Crystallized carbonate of soda	10 grs.
Water	1 oz.

for about thirty seconds, after which wash for the same time, and proceed as usual with development.

This developer can be used for a number of plates, and gives fine negatives of good printing quality.

After development, return your old developer to a stoppered bottle and keep for commencing development.

The reason for doing this is as follows:

For portraiture, as a rule, I give a little more time then necessary to make a full timed negative, and by commencing with the old developer I give the high lights a start of the shadows, which I can readily soften afterwards by the use of a stronger developer at the finish; thus obtaining the sparkling high lights so much admired in the wet plate and so seldom found in the average dry plate pictures.

This developer becomes muddy, and may be used repeatedly with fine effect.

Always place plates in a strong solution of alum after developing and rinsing, and before fixing. This gives brilliancy to the negative and prevents the possibility of softening.

In the use of the above formula it is important that pure chemicals be employed. I can only be responsible for the developer when operated precisely as I direct.

DAVID COOPER.

CHLORO-IODIDE GELATINE EMULSIONS.

BY V. SCHUMANN.

WHEN the gelatine plate was first introduced it contained bromide of silver only. Some time later iodide of silver was added, which, under proper application, considerably increased the sensitiveness of the plates to white and also to colored light. Only in some special cases plates were prepared with an addition of chloride of silver. The opinions about the value of the chloride of silver in the bromide, respectively, bromo-iodide gelatine, differed a good deal, and notwithstanding the fact that some were in favor of the chloride of silver, it has found, so far, very little practical use in the dry-plate process.

During the month of June of the past year I prepared several gelatine emulsions, and examined them spectrographically. Not one of these showed any particular advantages. I therefore abandoned all chloride of silver additions, and only lately I had occasion to add chloride of silver to my emulsion. The chloride of silver alone, suspended in the gelatine, and chemically developed, is only in a very limited manner adapted to negative work. But the condition changes in the presence of iodide of silver. Chloro-iodide gelatine plates may, under certain circumstances, be used with the same advantage as bromo-iodide plates.

Pure chloro-iodide gelatine, chemically developed, shows the greatest sensitiveness for the extreme violet at H (Frauenhofer line); towards both sides the photographed spectrum falls off quickly. Pure iodide gelatine will give, after long exposure, a blue stripe at G at the end of the indigo blue; for other rays it is much less sensitive.

Chloride of silver gelatine emulsion, with iron or pyrogallic acid developer, will show the image rapidly, but just as quick a fog will form. With much diluted developer, having a good addition of bromide of potassium, a negative free from fog can be produced, but it will be so thin that it is not fit for printing purposes. Dr. Eder's ferro-citrate developer works excellently if the exposure has been sufficiently long, but prolonged exposure makes the developer almost unfit for negative work, no matter how good it may be for copying with succeeding development.

The pure iodide of silver gelatine is partly diametrically the reverse of the chloride of silver emulsion. Distinguished by high insensibility, it is not fit for negative work. If even after prolonged exposure, and under a favorable light, a negative is produced, it cannot be used, being not sufficiently intense. The developing of these iodized plates is much slower than that of the chloro-gelatine plates. Fog need not be feared, for which reason all addition of KBr has to be avoided in the developer. These plates show the greatest contrast during fixing. The chloride of silver dissolves quickly, while the iodide of silver requires a remarkably long time for fixing.

The foregoing shows sufficiently that neither the chloro-gelatine nor the iodide gelatine will be suitable for negative work.

A combination or mixture of both silver haloids, if suspended in gelatine, will show quite different properties. This can be executed in different manners. The chloride and iodide salts, either one or the other, are dissolved with the gelatine, and nitrate of silver is then added in small quantities, or two emulsions are prepared, and the pure iodide-gelatine is mixed with the chloro-gelatine after washing.

Whether in this manner, by subsequent cooking, the emulsion mixture can be improved is a matter of conjecture, as I have made no test yet. But I am doubtful of success, because both bromo and iodide gelatine mixtures, so similar in many cases, will by cooking be changed into the more color sensitive modification.

Although my experiments with the mixture from both emulsions have led so far to no success worth mentioning, I might call attention to a peculiarity which I observed on such plates.

The images of the solar spectrum develop upon such chloro-iodide plates in a two-fold color. From R to G the negative is reddish; from G to violet it appears gray violet. If Stolze's potash developer (to which in this case I give the preference) is replaced by Eder's ferro-citrate developer, under a longer exposure a spectro-negative is obtained, where both colors strike the eye at once by greater brightness. It is here also that the Frauenhofer line G forms the dividing line between red and gray violet. This different coloration of both halves of the spectrum renders the determination of the photographic maximum essentially more difficult. Not only that the unfixed plate deviates greatly from the fixed plate in its intensity, but both colored halves will change oftentimes their intensity so completely, according to the use of bright or subdued light for observation, that the violet part seems to have disappeared entirely, while the other half seems to come out still much brighter.

After having convinced myself that a simultaneous precipitating of AgCl and AgI in the gelatine was not only advantageous, but even furnished very sensitive plates, I tried further to find out what quantity of iodide of silver would be most advantageous to the chloro-iodide emulsion.

I prepared the chloro-iodide gelatine emulsions with increasing AgI, and the same quantity of chloride of silver, in the following manner:

No. 353 chloro-iodized gelatine:
a— 0.64 grm dry ammonium chloride,
0.05 " potassium iodide,
1.50 " Simeons' gelatine,
15.0 c. c. distilled water.
b— 1.55 grm silver nitrate,
15.0 c. c. distilled water.

No. 354 same as No. 353, only
0.15 grm potassium iodide,
and 1.65 " silver nitrate, instead of the above.

No. 355 same as No. 353, only
0.64 grm potassium iodide,
and 2.14 " silver nitrate, instead of the above.

a and *b* were heated in boiling water, and *b* poured into *a* in small quantities under lively shaking. After one hour's boiling, the emulsion was set aside to coagulate over night; after that, it was washed for seventy-two hours, increased to double its volume by addition of water, and at once poured upon plates.

Already during emulsionizing the chloro-iodide gelatine deviated from the bromide emulsion in so far as to deposit a considerable quantity of silver sediments. All three beaker glasses contained at the bottom a spongy sediment, from which I carefully poured off the emulsion. Nos. 353 and 354 admitted blue light; No. 355 only orange-colored. But the blue of the former two was finer than that shown by ripened bromide of silver gelatine in transmitted light.

Pure chloride gelatine is almost pure white in bright or direct light. But if it contains iodide of silver besides the chloride of silver, it becomes lemon yellow, and this color is much darker in proportion to the quantity of the former. The color resembles the yellow of such bromo-iodide gelatine where silver salts were collectively precipitated in the gelatine. Emulsion No. 355 was the darkest.

Shortly after the addition of the silver solution, and also after finished boiling, I poured a small quantity from each bottle upon a glass plate. These six emulsions, after coagulating, were exposed to light. The unripe ones began to darken quickly, the others slowly. Nos. 353 and 354 were of a chocolate color, and no great difference could be found between cooked and uncooked emulsion. But chloride gelatine, No. 355, rich in iodine, was essentially different. Uncooked, it had a tone resembling that of the other two emulsions, but it was remarkably more transparent. Cooked, it had a grayish green color, which did not change after an exposure of even several weeks, and observed in transmitted light it showed an increased thickening.

Under the microscope the silver salts showed a granular condition, but the size of the silver grains had not increased after almost an hour's cooling. After repeated measurings I found the particles of silver to possess on average size of 0.001 m. m. with which, as is well known, fine negatives can be produced. I had not expected such favorable results, particularly as during boiling considerable quantities of AgCl and AgI had deposited in spongy form.

The dry plates had a matt surface. If flowed with unthinned emulsion the dried film will lose almost all gloss. I have never obtained such matt plates with bromide gelatine as those of the chloro-iodide emulsion. For developing I used Stolze's potash developer and the potassium oxalate of iron after Eder. The latter suits a little better for the plates No. 353, containing less iodine. The first gave with the two other preparations, particularly with No. 355, a more favorable result.

The value of these plates I could determine only by the spectrograph. The behavior of the same in the solar spectrum was surprising, amd entirely different from that of the pure chloride and iodide gelatine.

All three emulsions possessed high sensitiveness to color. No. 353 was darkened very evenly by violet and indigo, No. 354 the same and blue besides. The emulsion poorer in iodine was extremely thin, and given very much to fogging, but the other gave a strong spectrum of good intensity, and with some care also negatives free from fog. Gelatine. No. 354 resembled a sensitive bromide of silver gelatine. Entirely different in its spectral character was No. 355. Remarkably thin in violet, not less sensitive, but intense and excitable by indigo, blue, and blue green; this spectrograph resembled more the spectrum picture of that emulsion mixture which is produced from ready-made bromide and iodide gelatine. The Frauenhofer line F appears easily, and if the exposure is somewhat prolonged the lines *b* and E lying in the green are partly distinguishable. The plate works very clear with great intensity. I have convinced myself of this by exposing to sun, magnesium, and petroleum light.

Testing the plates No. 354 and 355 by way of the sensitometer table of Warnerke in such a way that when at a distance of ¾ meter from a piece of ignited magnesium ribbon of 25 m. m., there appeared upon the plate No. 354 the figure 20, while upon the plate richer in iodide the figure 18 appeared only. This shows that by the large addition of iodide the total intensity had been reduced, although the plate had considerably increased in sensitiveness for the weak rays. If I compare the sensitometric result with that of a pure bromide gelatine, which was made after Eder's ammonio-oxide of silver method and digested for ¾ of an hour at 37–39° C., the chloride emulsion containing the more iodine is behind in sensitiveness, whereas the other, No. 354, equals it completely. The bromide emulsion gave under otherwise equal conditions, and by application of the same sensitometer table, likewise the figure 20.

A recapitulation of all these results shows now, that the chloride emulsion No. 353, with little iodide of silver, can hardly be used, as density and clearness in the shadows are wanting, but that a chloro-iodide gelatine, as No. 354, will rank very well with pure bromide of silver gelatine. If the fog caused by careless developing should hinder the use of the chloro-iodide emulsion, a little larger addition of iodide of silver would give relief. That AgI has here also an anti-fogging effect can be recognized in the strongly iodized plates No. 355, which work very clear, sometimes even a little hard. For this reason, but particularly on account of the long time it requires for fixing, I would not like to recommend the chloro-iodide gelatine No. 355, as well as No. 354, although it may be given the preference in many cases on account of its greater sensitiveness for the lighter rays, and for the fact that it requires less attention during developing.

Negatives I have not taken with chloro-iodide gelatine. But conclusions for the qualifications of the chloro-iodide gelatine can be drawn from the character of the spectrograph and more yet from the fine gradation of the sensitometric plates. According to this, No. 354 particularly had to furnish very soft negatives with fine half tones, while No. 355 might have a tendency for more brilliancy and stronger contrasts.

I intend to continue the experiment, with chloro-iodide gelatine, and shall pay particular attention to the influence of ammonia upon the emulsion ready for flowing the plates. The increase of sensitiveness which chloride of silver experiences by fuming with ammonia is known to all; also, that after volatilization of the ammonia the AgCl sinks to its original sensitiveness. But it has not been proven that the condition of chloro-iodide of silver gelatine is the same. To judge from one of my last plates, which was bathed in ammonia water for a few minutes and then dried, a sensitizing influence of the ammonia seems to continue also after its volatilization from the plate, as the well-dried film fogged completely and almost instantaneously when placed in the developer.

(Translated from the "Photographisches Wochenblatt" by H. D.)

HYDROQUINONE AS DEVELOPER FOR DRY PLATES.

A SHORT time ago we developed several plates with hydroquinone, using the following prescription:

a.—	Water	240
	Hydroquinone	8
	Citric acid	1
	Sulphite of soda	10
b.—	Water	240
	Carbonate of potassium	10
	Sulphite of soda	30

To 50 c.c. of water I took 10 c.c. of *a*, and 10 c.c. of *b*.

The plates develop in this solution very slowly, pyrogallic acid with same time of exposure developing almost ten times quicker, but the negative will become eventually just as strong. While the negatives developed with pyrogallic acid have a grayish brown tint by transmitted light, those developed with hydroquinone have a more bluish-gray appearance. The advantages of using the hydroquinone developer I could not discover.—*Translated from "Photographisches Archiv" by H. D.*

HYDROXYLAMINE.

A New Developer for Dry Plates.

Oxalate of iron and pyrogallic acid are the only developers which at present are used by practical photographers, all substances heretofore introduced to replace them having proved a failure.

Messrs. Carl Egli and Arnold Spiller now recommend hydroxylamine in combination with caustic soda. This developer is said to give a clear negative of the color of a wet collodion negative, without spots or any deposits, and can be easily modified when over—or under—exposed; it is not changed by atmospheric influences and cannot spoil during development.

Hydroxylamine originates by the action of tin and muriatic acid upon nitric—aethyl ether. It is considered as ammonia, in which one atom of oxygen is replaced by the radical OH:

Ammonia: *Hydroxylamine:*

$$N\left\{\begin{matrix}H\\H\\H\end{matrix}\right. \qquad\qquad N\left\{\begin{matrix}OH\\H\\H\end{matrix}\right.$$

For the developer the hydrochlorate of hydroxyamine is used, which crystallizes from the alcoholic solution in needles and from the aqueous in sheets. At present it is pretty expensive, but if it should be successfully produced by the action of sulphuric acid upon chlorpikrin, it could be sold for a much lower price.

For bromide of silver gelatine plates the following solutions are recommended :

A.	—Hydroxylamine hydrochlorate	32
	Citric acid	15
	Bromide of potassium	20
	Water	480
B.	—Caustic soda	2
	Water	8
C.	—Bromide of potassium	1
	Water	24

A half plate is soaked for one minute in 100 c.c. of water containing 4 c.c. of *A.* Twenty drops of *B* are then added, and if necessary 10 drops more. If the plate was exposed too long, a few drops of *C* are added to obtain the picture.—*Translated from "Photo. Archiv" by H. D.*

"What Our Friends Would Like to Know."

N. B.—*We cannot undertake to answer communications of a technical nature except through the columns of the* BULLETIN, *where any such correspondence will be answered promptly.*

Gelatino-bromide rapid printing paper.—C. L. P. says : "I followed the directions exactly with satisfactory results, except in the washing, when large blisters appeared. The water I use is very cold. I used weak sulphuric acid bath to obviate yellow tinge. Is there any objection to this? I used alum solution before fixing, but the prints blister in that. What I would like to know is : (1.) The cause of the blistering in the G. B. R. P. paper? (2.) Whether sulphuric acid in the iron solution will obviate the yellow tinge? (3.) Whether the ordinary sensitized paper, put up in boxes, will retain its printing and toning qualities for any length of time?"

Answer.—Your solutions should be cold. After fixing and slightly washing the proof pour over it a solution of alum, one ounce of alum to 16 ounces of cold water. Allow the print to remain in this for two or three minutes, then wash well for five minutes and hang up to dry. You should allow the print to remain in the hypo at least twelve minutes, so as to avoid any yellow stains. See that your oxalate is acid, and also add sulphuric acid to your iron. In regard to your questions : (1.) Your wash water is too warm ; use ice water. (2.) Yes. (3.) The ready sensitized paper keeps and tones well for a long time.

A.C.C.—*To make a silver bath for collodion negatives.*—If you are not sure that the water is pure, put it in a glass vessel, add to it a very small quantity of nitrate of silver, shake well, and place the solution in the sun. If there is organic matter in the water, it will under the action of the light combine with the silver, and will be deposited as a black deposit at the bottom of the vessel. Decant the clear water and use it for making the silver bath. After having dissolved the nitrate of silver in this water, put it again in a glass vessel, add to it a very little liquid ammonia, sufficient to render it alkaline to litmus paper, and stand it again in the sun. If there may have been any organic matter in the nitrate of silver, it, by the action of the light and the alkaline condition of the solution, will be thrown down or precipitated, as a black deposit. When this action has ceased, filter the solution (through cotton and not through filtering paper) and divide it into two parts; to one portion add a very little of a weak solution of iodide of potassium; enough will have been added when some of the iodide of silver formed remains undissolved; filter this portion and then add it to the other. The solution will now be saturated sufficiently with iodide of silver and will be possibly slightly alkaline. To render it fit for use add to it, drop by drop a very weak solution of c. p. nitric acid, enough to very slightly redden blue litmus paper. Now try to make a negative. The collodion should always be of a light yellow color.

We give above a method of proceeding which will effectually eliminate all organic matter from the bath. Never use acetic acid No. 8 in making a negative bath; it is not sufficiently pure.

As to the formula of collodion, we never use more than 7 grains per ounce of iodide and bromide together, and only from 5 to 6 grains of cotton per ounce. Ether and alcohol equal proportions. The only other thing we can suggest with reference to your collodion is, not to use so large a proportion of iodide of ammonium. We do not know of any materials for collodion better than those you employ. You can regulate the proportion of the iodide and bromide best by your own experience; a collodion that would do for portraits in our climate and among our people might not suit you at all.

To make a silver bath for paper, dissolve the nitrate in the water and add a very little liquid ammonia, producing thereby a slight brown precipitate, most of which should remain undissolved. Allow this to stand and settle, and decant the silver solution into your dish; before floating the paper rub each sheet well on the albumenized surface with a pad of cotton flannel; this will remove from the surface the cause of the irregular flowing of the silver solution. It is better to keep the paper in a damp place.

Q.—W. C. I. writes : "Having had a dispute as to the proper time to silver and fume the N. P. A. paper, I decided to leave it to you. Will you be kind enough to tell me the strength of the bath, the time to silver, and the time of fuming?"

A.—The bath should be 50 grains to the ounce ; the time of silvering, three minutes ; and the time of fuming, 20 minutes.

Q.—W. writes : "Please through the *Bulletin* state the general price for photographing a corpse."

A.—That depends on the distance from the gallery, and some other circumstances, and also the expression desired.

In ordinary cases, $10 additional to the usual charges for the picture, and upwards. Often $25 to $100 are paid, especially by the wet process. This is generally regarded as a very disagreeable duty, and declined if not well recompensed.

We might add in this connection that a sort of posthumous portrait of a distinguished gentleman has recently been placed on public exhibition in Scarborough, England. The photograph is so stricking or lifelike, perhaps, that it has given quite a shock to some of our English friends, who are not disposed to regard such works with favor. The cost is not stated, but was no doubt considerable.

Q.—G. E. W. says: "I have been troubled for a few days with the film on my tin plates; it does not stick. When I wash the pictures after development the film slips off ; my chemicals are all right, just the same as I have been using all the while ; I cannot find any cause for it; if you know of anything that should make the trouble please let me know?"

A.—It has sometimes been the case that ferro plates have a greasy coating which allows the collodion to peel readily; it can be remedied by rubbing the surface of the plate with a piece of cotton flannel moistened with alcohol.

Q.—J. L. asks: "Will you be so kind as to inform me if there is an instantaneous dry plate for taking ferro-types ; the size of the plate, and the price of the same. Should be pleased to receive full information concerning the working qualities of the plate, &c."

A.—We know of no dry process for making Ferrotypes."

Q.—R. J. B. says : "We are in a small way doing some zinc etchings and photo-engravings the only difficulty we find is that we cannot get our negatives opaque enough; you will therefore greatly oblige us if you will advise us how we can get them dense, yet with clear, clean, sharp lines."

A.—For making dense negatives of line work, use Anthony's new negative collodion and an acid silver bath 40 grains strong; fix in cyanide of potassium. When well washed immerse the negative in a solution of bromide of copper, made as follows:

Sulphate of copper..............	100 grains
Bromide of potassium............	100 "
Water..........................	10 ozs.

This will bleach the negative; wash well and put your negative in a 15-grain solution of nitrate of silver; this will instantly turn it a jet black; if not dense enough you can repeat the operation; wash well after each solution is used; you can use the solutions repeatedly.

Q.—W. H. S. writes: "What makes the albumen come off and ruffle up on prints after you put them through the toning bath, hypo., etc? They have a measley look; is it on account of changing them from a luke warm toning bath into colder water?

2d. What is the trouble with my collodion? I have my bath in good working order, and begin to coat plates; after making a few nice negatives fog begins to appear, and finally I cannot make a negative. Is not my bath in harmony with it, or what is the trouble?

3d. I think of getting a lens suitable for 11 x 14 plates, and a Dallmeyer is rather too expensive for me; what comes next in quality and price?"

A.—1st. The trouble with your albumen paper is caused by the change of temperature, and density of the hypo. solution ; Put the prints in a strong solution of salt and water after fixing; then wash; be careful not to allow the prints to stick together when toning and fixing. 2d. Your silver bath is too neutral ; add more nitric acid to it; also add a trace of free iodine to your collodion. 3d. The Platyscope lens is the next best to the Dallmeyer.

Q.—H. O. W. asks: "Will the toning bath (the formula for which is sent out with your ready sensitized paper) keep for any length of time? And if so in what proportion must the chloride of gold and acetate of soda be added to strengthen it when it becomes exhausted?"

A.—The toning bath mentioned will not keep for any length of time. The following bath will keep, but will not tone so quickly as the one you now use:

Chloride of gold..................	1 grain
Acetate of soda..................	30 "
Water.........................	8 ozs.

This should be mixed one day before use. Some fresh gold which has been neutralized with a little bicarbonate of soda should occasionally be added.

Q.—L. S. H. writes: "I want to know how to make positives on glass; what materials I need, and how to use them. Also, what I need to make enlarged negatives from gelatine positives? I would like to know something about Anthony's Rapid Printing Paper. Here is what I get as a result; either the paper is not right, or I don't know how to use it. Will you help me by telling how and where to get the materials and how to use them?"

A.—"For positives on glass use what are called transparency plates (Anthony's give fine results), and develop with ferrous oxalate. You will need for these a saturated solution of oxalate of potash, made slightly acid with oxalic acid, and a saturated solution of protosulphate of iron made slightly acid with sulphuric acid. When solutions are ready (and quite clear), pour out enough oxalate solution to cover the plate, and add to it one-sixth of its volume of iron solution, and two or three drops of a solution of potassium bromide of twelve grains to the ounce. Place these in your developing dish and begin to develop your picture. If the picture begins to come out in thirty or forty seconds, continue to develop until the desired density is obtained. If the picture does not come out thus, pour the developer off the plate, add a little more iron solution, and try again. Develop slowly; never add the oxalate to the iron solution, but always the reverse; and never add iron in greater quantity than one-third of the volume of the oxalate. A little patience and you will make good positives—a feat already accomplished by many of our amateurs here.

For enlarged negatives from positives, use large gelatine plates and an enlarging camera. The sample of Rapid Printing Paper sent has been exposed and not developed. In the case of Anthony's paper you will find a formula for developer given in each box or package, which is the best adapted to the development. In each box of Anthony's transparency plates will be found a formula for developer best suited to them. Get good oxalate of potash and proto-sulphate of iron. There is much rubbish sold under these names.

Found in the Editor's Box.

POLITICAL—IMPORTANT IF TRUE.

IT is understood that Senator Hill is about to favor the repeal of the Silver Coinage bill, having learned that the increasing numbers of amateur photographers will consume *all the surplus product of the mines.*

THE bimetallists are highly gratified to learn that silver and gold circulate harmoniously in photographs. They think from this circumstance that their *views will be found satisfactory everywhere.*

WE learn that the Secretary of the Treasury will shortly issue an address to the country requesting that all stockholders in silver mines should become amateur photographers, and the officers of the mining companies will follow suit with a recommendation that all patriotic Americans should buy silver stocks preparatory to *becoming amateurs.*

MRS. PARTINGTON, on the other hand, cautions the young ladies against these "amatory fotographers, who go around takin, every blessed thing they can set their eyes on and turnin, the world upside down generally."

A WITTY contributor writes:—No correspondent has yet supplied the information desired by Mr. Charles G. Leland, with regard to the first photographs on paper. It may be interesting, therefore, to point to an early reference to photography in Tom Hood's well-known ballad. Mr. Benjamin Battle, having exchanged on the field of glory his flesh and blood legs for wooden imitations, complains that his young woman—

> "When she saw my wooden legs,
> Began to *take them off.*"

Here is an instance of feminine amateur photography, no doubt the earliest on record; and Tom Hood's publisher had the result *printed on paper.* If any doubt is felt on the matter, we can quote in support from Byron's "Fool and his Money." Mr. Toole, as "Chawles," is much puzzled by references to Charles I. and his misfortune. "Had 'is 'ead taken off!—futtygraphed, d'ye mean, sir?" It is clear, then, that Mr. Leland's query is answered.—*The Amateur Photographer.*

THE AMATEUR PHOTOGRAPHER AND THE GRIZZLY BEAR.—WE are happy to add the name of Theodore Roosevelt to the list of photographic amateurs.

It is the mission of Mr. Roosevelt to reform abuses of all kinds, and when an enormous grizzly of 1,250 pounds raised his head over a pile of stones and began to abuse him with the fearfulest of growls, he promptly planted a bullet in his eye.

We shudder at the thought of the risk he ran, but he is back, safe and sound, and has promised to let us illustrate the BULLETIN with his photograph, introducing the skin of the aforesaid grizzly among the accessories.

Views Caught with the Drop Shutter.

WE take great pleasure in noting that Dr. H. W. Vogel has been decorated by the Emperor of Germany with the order of the Red Eagle. Such an acknowledgment of true merit meets our entire approbation ; and we hope the learned Doctor will live to receive many more such recognitions of his valuable services to photography.

How to get high prices has puzzled many a good photographer. One of the first things is to be worth something yourself. Then put some of yourself—your worth—in every picture you make. This, we find, is the method adopted by our most successful photographers. —*Photographic Mosaics.*

AT the last monthly meeting of the Halifax Photographic Society, two subjects were broached which were of more than local interest. Mr. E. A. Caw stated that there were many amateurs who would gladly join the society, but were deterred by a feeling of diffidence. He thought that every encouragement should be offered to amateurs to join their ranks, and that special instruction should be given. We hope that other societies besides that of Halifax will devote evenings to the special instruction of amateurs, and by so doing they will greatly increase their popularity and usefulness. The other point was that raised by Mr. W. Clement Williams, who, with praiseworthy boldness, complains that few photographers could lay claim to any knowledge of the science of their art. As a general statement—though there are happily many notable exceptions—we cannot but agree with Mr. Williams. It is much to be regretted that before learning the mechanical manipulations of photography, a sound substratum of chemistry is not acquired. Were such knowledge more diffused among photographers, some of the absurd questions asked at meetings of the Photographic and other societies would be rarer, and many of the ignorant rule-of-thumb processes would be discarded for exact scientific methods.—*The Amateur Photographer.*

OWING to the badness of the light, the illustration for Mr. H. G. Spearing's article has not been finished. We hope to print the conclusion of his paper next week.—*The Amateur Photographer.*

WE are sorry for our English cousins, but must confess we cannot get much ahead of them this side of the water lately. We thought they knew about the rapid printing paper, and the use of oil lamps for printing. We recommend them to try this method next time. It works charmingly over here, and makes us more independent than we were before the late election.—*Editors of* BULLETIN.

Patents.

AMERICAN.

No. 309,736. Photographic printing frame. John A. H. Parsons. Filed June 19. Issued December 23, 1884.

No. 309,974. Photographic printing frames for vignetting. Charles A. Needham, N. Y. Filed June 12, 1884. Issued December 30, 1884.

ENGLISH.

APPLICATIONS.

No. 15,542. Alfred Julius Boult. Holders for photographic films. Communicated by George Eastman and William Hall Walker, United States. November, 1884.

No. 15,757. Herbert John Haddon. Heliographic copying apparatus. Communicated by Hugo Sack, Plagwitz-Leipzig. November 29, 1884.

No. 16,087. Charles Sands and John James Hunter. Improvements in photographic cameras. December 6, 1884.

No. 15,887. William Middlemiss. Improvement in photographic cameras. December 3, 1884.

PATENTS SEALED.

No. 11,556. Eugene Hunly. Method and apparatus for taking photographs by artificial light. August 22, 1884.

SPECIFICATIONS PUBLISHED.

No. 1,251. George Rydill. Improvements of treating photographic transparencies or transfers, so as to represent stained glass. January 11, 1884.

No. 1,380. R. Brown, R. W. Barnes and J. Bell. Preparation of pictures and photographs.

No. 1,622. Alexander Crawford Lamb. Improvements in photographic cameras. January 17, 1884.

Bibliography.

"*The Practical Photographer*"—is a new quarterly, edited by H. D. Garrison, of Chicago. It is a very "creditable publication," and promises to be a useful addition to the photographic press.

"*Photographic Mosaics*" for 1885. A neat little volume, edited by Edward L. Wilson, of Philadelphia, is full of very suggestive articles upon the art of photography by both amateurs and professionals. We have spent much pleasant time rambling through its clearly written and well-stocked pages.

"*Walzl's Monthly*," edited in Baltimore, comes to hand well stocked with useful articles upon photographic subjects.

"*The Photographic Eye and the Eye*," edited by C. Gentilé, always comes to hand on time and contains interesting matter for all photographers. Its fair and upright editorials commend it to all who have the best interests of photography at heart.

When the Chicago "Eye" sees anything wrong, it does not cast "sheep's eyes" at it, but turns the "bull's eye" square on.

"*The Photographer*," issued by Pach, the well-known college photographer, is a bright little sheet with much interesting matter.

We also have before us the "*Journal of the American Chemical Society*," "*The Scientific American*," "*Revue Photographique*," "*The British Journal of Photography*," "*The American Monthly Microscopical Journal*," "*The Amateur Photographer*," "*Chemisch Technischer Central-Anzieger*," "*Deutsche Photographen-Zietung*." "*Photographisches Wochenblatt*," "*Le Moniteur de la Photographie*."

All publications of real merit, that need no commendations from us beyond a thankful acknowledgement of their reception.

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PUBLISHED SEMI-MONTHLY.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
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A STANDARD UNIT OF LIGHT.

For some years past the question of a standard by which to measure the illuminating power of various sources of light, has been a vexed question amongst scientific men and those interested in furnishing mankind at large with the means of extending the comforts of artificial illumination after sunset.

It is not yet one hundred years since men were dependent upon tallow dips, whale oil and wax candles as sources of artificial illumination. At that time these were the only means of extending the working hours of the day, and the source of light used depended upon the state of the purse of the individual desiring such illumination. The poor man was glad to get his "farthing rushlight," while the rich bathed themselves in the effulgence of many groups of wax candles, set in those candelabra that now delight the hearts of the collectors of bric-a-brac.

At this time the amount of light obtained from the consumption of any specified quantity of the various illuminants received little or no attention. But with the advent of gas-lighting the conditions were changed, and men began to make comparisons between the various sources of light. Gas gave such a brilliant light, compared with candles and oils, that its illuminating power began to be measured by the number of candles it was equal to. It soon became evident that to make a fair comparison, a candle of standard size, and consuming a definite amount of material in a given time, must be compared to a given volume of gas consumed in a given time. Just when this method of comparison of illuminants was first brought out is not apparent, but it appears in some of the earliest descriptions of the methods of testing gas.

Such, then, was the way lights of different powers of illumination were compared until quite recently. Men talked of gas of seventeen-candle power, thirty-candle power, and they understood the terms used. What they understood was that the gas consumed was equal to seventeen or thirty standard candles burning at the same time. This method of rating the value of various illuminants in numbers of standard candles still continues, but efforts are being made to substitute some other source of illumination for comparison, instead of the standard candle hitherto used to test the value of sources of light. It is not necessary to enter upon a discussion of the various methods proposed to obtain this result—a reliable source of light for comparison. But, as the months roll by, we are forced to notice some new unit of light proposed to replace the candle. We have already had various burning hydrocarbons proposed, and also volatile organic liquids allied to the various flavoring extracts. And it has also been proposed that the light emitted by a definite area of melted platinum be used as a unit of light. But none of these methods have yet found favor with those who have to make practical tests of illuminating power upon various sources of light. They have still to rely upon the standard spermaceti candle burning 120 grains per hour.

Such is the state of the question of a standard unit of light to-day with those who look upon light as a source of illumination *per se*. And now come the photographers and demand at the hands of the scientist a standard unit of light for them.

The conditions of the two problems are in many ways different. The ordinary individual is content with light containing those rays that make objects plainly visible and at the same time does not strain the eye by its dazzling whiteness. To the photographer, on the other hand, light in which bluish-white or violet-white rays predominate, is the most desirable. It would, therefore, appear that for the photographer's purpose some new method of measuring light is needed.

Since it is the actinic power of the light that the photographer values, it would probably be most useful to determine the comparative actinic power of the various ordinary sources of illumination; and thus fix upon one that everybody could use and that would serve as a means of comparison. In attempting to attain this desirable end, several important considerations meet us. In the first place, the source of light must be easily obtained, simple in manipulation, and not costly. It must be of such a character that any one with a fair amount of intelligence can manage and understand it. Secondly, it must contain those light rays that are most useful for photographic work, and these rays must be in the best proportion.

The question now suggests itself, how are we to determine which is the best light for photographic work?

At this point the property of the dispersion of light comes to our assistance. When a beam of light passes through a prism it is decomposed into its component colors, and these arrange themselves according to the amount of each color in the source of light. In other words, we get a spectrum. Thus, if the light is blue, we shall get blue light through the prism, and the place where the red and other rays should be, will be dark; while, on the other hand, if the source of light is red, the light going through the prism will be red, and the places of the blue and other rays will be dark. If the light is of a mixed character the spectrum will show which color predominates. In this way all the sources of light could be tested, and that containing the largest proportion of the actinic rays should be selected for photographic work.

It must not be forgotten in this connection that the means of causing the dispersion of the light has an important effect upon the proportions of the various colors in the spectrum produced. Prisms of various kinds of glass give different ratios of colors from the same source of light; and the only correct method of obtaining a rightly proportioned spectrum is with diffraction plates.

These diffraction plates have very fine lines upon them ruled very close together, 12,000 or more in the length of one inch. Such diffraction plates give us what is called a pure spectrum, that is, a spectrum in which the various colors in the source of light are in their correct proportion. In the case of a glass prism, the yellow portion of the spectrum is nearer to the red end than it is in the case of a diffraction spectrum. The darker colors of the spectrum from a glass prism are nearer to each other, while the lighter ones are more widely separated.

It is, therefore, most important that the correct ratio of colors in any source of light should be ascertained by this method.

It will be argued that it is becoming more and more unimportant to have what is called an actinic source of illumination, since plates are now prepared which are sensitive to all the various colors of the spectrum. This is true; but such plates are not easily prepared, and are only used in special cases. What is wanted is a standard of light suited to every-day work with the photographer, and one containing the most useful light rays.

Among sources of light more recently suggested we have the incandescent platinum light, and the acetate of amyl lamp suggested by Mr. Siemens. The latter is too new to discuss its merits now.

With regard to the incandescent platinum lamp, the specimen we have seen did not come up to our expectations. It may be that some improvement is necessary to obtain from it the light best suited to photography. We have seen a whiter and as steady a light given with a small-size Siemens regenerative gas-burner. And in this connection we would remark it is important that the quality of the gas used in the platinum burner should be known, and the proper adjustment of air made to suit it. In New York City we have gas ranging from seventeen-candle power coal-gas to thirty-candle power water-gas. From our observation of the platinum burner in use, it would appear that water-gas is best suited to it, as this gas gives a flame of very great heating power.

We have seen another incandescent burner recently that gives a light containing a large proportion of the actinic rays, but at present we cannot say much about it.

In regard to the suggestion to use the electric light, we feel very much inclined to wait till our friends, the electricians, can assure us that they can make it steady, and of uniform intensity. All the electric lights we have seen have had more or less vibration in them ; and in the incandescent type of light, the gradual deposition of some dark material upon the interior of the glass globes necessarily diminishes the amount of light transmitted. In the case of electricity, also, there is not yet any means whereby everybody can use it, and its use is confined to favored localities.

We give these thoughts upon a standard unit of light, because the matter is very important and should be thoroughly discussed. We cannot now see which will be the best kind of light to use, but that a standard light is necessary for photographic investigations is beyond all question ; and we shall be glad if we can set some of our friends to working up the problem, as it is impossible to judge of the sensitiveness of modern dry plates unless some uniform means of illumination is used to test them.

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We have to acknowledge the receipt of a very handsome invitation to the entertainment given by the "Chicago Amateur Photographers Club," January 19th, 1885. We greatly regret that we cannot travel so far at the present time, and feel assured that if the entertainment is to be compared to the handsome style of the invitation, we shall lose a great treat through our absence.

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PROF. CHANDLER's article on "Photography" will be continued in our next issue.

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FRIENDLY WORDS.

LETTERS of congratulation upon the new issue of the BULLETIN have already begun to come in. We give below some that we have just received:

"I should think the periodical, of which you send me a number, would be a very welcome visitor to the magicians of the dark chamber, professional and amateurs."

Very truly yours,
OLIVER WENDELL HOLMES.

"The BULLETIN just arrived in its new dress, and is handsome. It is a good idea illustrating the first number with Prof. Chandler's portrait; it shows the readers who he is, and they take to his articles with keener zest."

Fraternally,
GAYTON A. DOUGLASS.

"We congratulate you upon the improved appearance of the BULLETIN."

Yours truly,
EASTMAN DRY PLATE & FILM CO.

E. & H. T. ANTHONY & CO.:

DEAR SIRS,—Permit me to congratulate you on having secured the services of Prof. Chandler and his friends in the direction of the BULLETIN. One long out of the practice of an art falls rapidly behind in the literature of that art. I go back in fancy this evening to the time when I was fighting my dry friends—I, the champion of the wet process only. With your friend H. T. Anthony, and some of the members of the Photographic Exchange Club, I one day went to High Bridge and fought the battle in the field; I with my wet traps, they with their dry. It was many years ago, and yet it is fresh in my mind as if yesterday. Now, dry plates only are used, and the silver bath is banished even from the dark room of the professional photographer. It must be a very desirable thing, thanks to you and all who have catered to the convenience of the photographer, to buy ready-made the plates that are to be exposed and then developed, without any of the dirt and anxiety of the old processes. But what in the world is there to write about now? It is well to resort to such talent to fill the pages of the BULLETIN, when the art seems to be so near its highest point of excellence. Wishing a bright future to your journal under its new management, I am, my dear sirs,

Yours truly,
COLEMAN SELLERS.

We fear our kind friend is indeed behind the times in photographic progress if he thinks we have reached the highest point of excellence. We shall have attained this highest point only when we can produce photographs in their natural colors; and even then, the infinite changes of nature, and her various phases of beauty, will supply material for thought and the working out of the finest results of the photographic art. Our only difficulty now is to know what to write about first, so many new possibilities suggest themselves to our minds every day; and also to find the time to investigate the new ideas thrust upon us by others. It appears to us that photography has taken a new lease of life in these times, and the future is full of promise for great achievements.

"I tell you, Messrs. E. & H. T. Anthony & Co., I have made faces for a quarter of a century, and I like that new face of the BULLETIN. Mark me down as one for the new change, and add the bill to my next order."

Very respectfully,
SINGHI,
Binghamton's,
Fotografer.

"We have received the first number of your new and *elegant* edition of the BULLETIN, and hope you may be amply rewarded for your untiring efforts to serve the fraternity."

Very truly yours,
DAVID TUCKER & CO.,
Buffalo, N. Y.

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GELATINE FILMS.

THE Eastman Dry Plate & Film Co. are making extensive preparations for the manufacture of gelatine films instead of dry plates for negatives. We have made arrangements to have the BULLETIN illustrated at an early date with a picture taken from one of these film negatives, and shall thus be able to give our readers an idea of another advance in the art of photography.

OUR PICTURE GALLERY.

WE have before us a number of pictures received from various friends and subscribers, which we are very pleased to notice.

A gem of instantaneous work, by Mr. Will Mowrey, of Troy, is quite unique. It is a drop-shutter picture of a locomotive and train of passenger cars traveling at forty miles an hour. The picture was taken at Van Schaick's Island, in the Mohawk River, and on the line of the railroad of the Delaware and Hudson Canal Co. The time was about five o'clock in the afternoon. The background is the sky, unmarred by any object, and immediately in front is the locomotive just caught upon the plate. The result is a very sharp view, with an amount of detail that is remarkable, when we consider how dark an object a locomotive is. Clouds of heavy black smoke are pouring from the funnel, and the light and shadow of these is finely caught. The number on the front of the engine, and the faces of the engineer and fireman, are quite distinct. Altogether, we must congratulate the artist upon his skill under very adverse circumstances.

A very pretty picture of the son of Mr. Chas. E. Wallin, of Montgomery, Alabama, with a hunting dog at his feet, shows good taste in posing and much artistic spirit. The little fellow appears to be quite on the alert, and ready to bring down any game that comes within reach of his gun.

Walkins & Simmons, of Pittsfield, Mass., send us a number of pictures from negatives on Eastman's Special Plates. They are very clear and well executed specimens of photography, especially one of an old gentleman with white hair. The little child's picture is also remarkably good, and has a very sweet, childlike expression.

A GREAT PICTURE.

WE recently visited the studio of Mr. Anderson, the well-known photographer, of New York City, and saw one of the largest pictures ever made in which photography has been used to produce artistic effect.

The picture represents the interior of the Armory of the Seventh Regiment of the N. Y. National Guard, and covers a canvas about six by eight feet. On the floor are about eight hundred figures of men and officers of the regiment, and in the galleries are a number of distinguished men, such as General Grant, J. G. Blaine, Gen. Logan, President-elect Cleveland, Vice-President Hendricks, Geo. W. Curtis and others.

The picture is a grand composition group; the arrangement of the officers and men is very artistic and the effect most pleasing. Groups of well-known friends are seen together, and the ease and manner of each figure is strikingly lifelike. The perspective of the whole is very perfect, and the effect upon the eye is unusually natural.

To accomplish this great work it has been necessary to take about four thousand negatives; in some cases twenty sittings by the same individual were necessary to obtain the requisite natural ease for the group in which he stood. The whole work was finished in about sixteen months, and is an example of patience and artistic skill.

DON'T FORGET our premium offer for new subscribers to the BULLETIN. See page 13 of the issue of January 10th.

ARRANGEMENT OF DARK ROOMS.

One of the most troublesome things an amateur has to contend with is the arrangement of his dark room so as to get the best results. A large portion of his difficulty arises from the fact that he does not know exactly what he wants, and consequently cannot plan to the best advantage. In the accompanying illustrations we show some plans of dark rooms and dark room apparatus, which will be found useful, and may give hints to the professional as well as amateur.

Figure 1 shows an arrangement of a very simple character, devised by Mr. H. T. Anthony, for supplying water to a dark room in a country house. As will be seen, it consists of a tall stand supporting a barrel of water. Over the top of the barrel a piece of netting is tied to prevent dust and dirt from getting in, and also to strain the rain water, which is conducted from the roof by an ordinary V-shaped spout. A short piece of lead pipe extends through the room; and into the mouth of this pipe is driven an ordinary wooden vinegar faucet. Just below this is placed the sink, and underneath a keg is placed to catch the waste water. This, when nearly full, is taken up and carried outdoors.

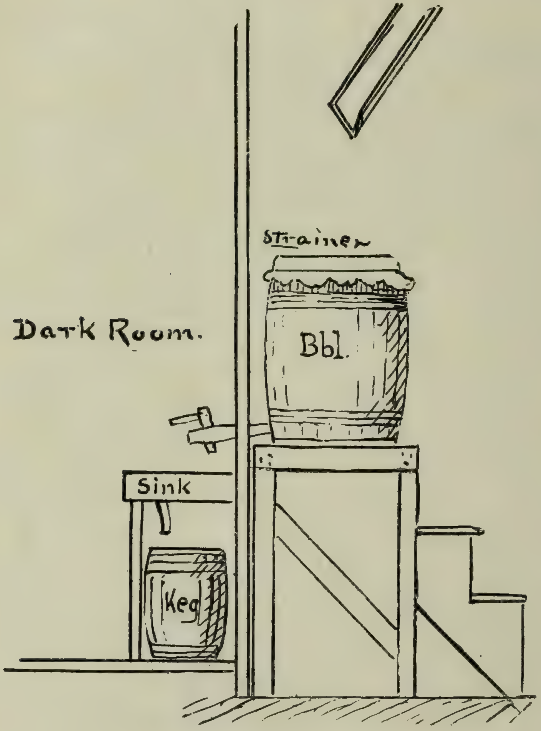

Fig. 1.

Figure 2 shows an entirely different arrangement for supplying water. The sink is a cheap cast-iron tray, set on top of the table and projecting over far enough to allow the drip to fall into an earthen jar. The water is contained in a large tin pail suspended from the roof by a hook. A rubber tube leads from the water-pail down to the faucet, which may be of wood, or such as is used by plumbers. It is held in place by being screwed on to a bracket. When the pail is empty, the rubber tube is lifted out of the pail, filled, and the tube put in place again. It forms a syphon, and as shown in the cut, gives a fall of about four feet. A couple of turns of copper wire round the bend of the tube and hooked over the side of the pail prevent it from dropping to the floor. A common water-pail has been used by the writer very frequently for the same purpose, but it has a fault of shrinking badly when left for a long time without water, and of giving endless trouble. The tin pail should have a coat of red lead paint, both inside and out. It is a great advantage to have the water supply outside of the dark room, and where the plan followed in Figure 1 is practicable, it will be found more desirable than that shown in Figure 2.

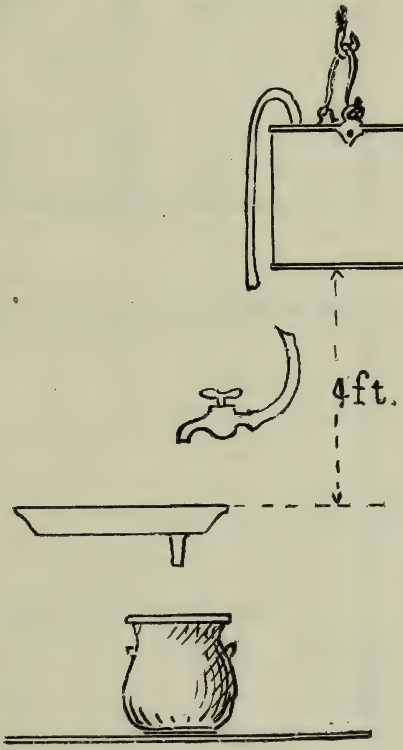

Fig. 2.

Figure 3 represents a dark room arranged by a gentleman in the northern part of New York. It was of considerable size, and was divided into two portions. The outer one was used for storing plates and keeping various supplies which were needed in the developing room. The inner room (A) is lighted by a window in the front, directly over the sink. Around the walls shelves are placed. At one side is a large table containing the hypo baths. A glance at the arrangement of the doors shows the advantages. By the use of two rooms, it is possible for a person to pass from one to the other without interrupting the development of the plates, or causing any entrance of light into the developing room. By making the space between the doors large enough to accommodate shelves, this intermediate room becomes decidedly useful. Being sufficiently screened from light to protect plates, it gives complete security to the dark room itself. The shelves in room A extend almost all the way round the walls; for convenience sake, however, a portion was left blank. The room was ventilated by a fireplace, a very important matter, which is frequently neglected in dark rooms. In winter a stove was set up in the room to give warmth.

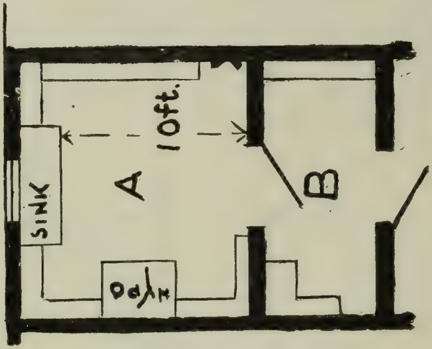

Fig. 3.

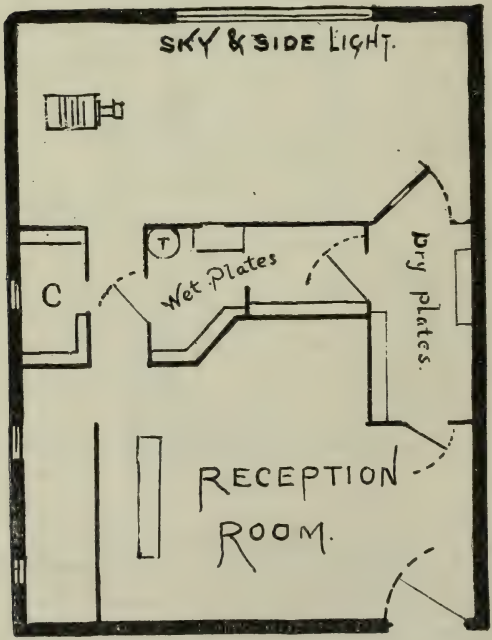

Fig. 4.

Figure 4 represents the very peculiar, though convenient dark room of Mr. Ayres, of Augusta, Me. It consists of two portions, one of which is entered from the reception room, the other by the passage to the operating room; a door connects the two portions of the dark room. One portion is devoted to wet plate work, while the other is used for dry plates. The shelves are very conveniently located in both rooms, and the tables in the dry-plate room, together with the usual apparatus, enable the plates to be developed with ease and rapidity. There is considerable advantage to be derived by keeping wet and dry plate work separate, and in this case the two rooms are made to answer each for an ante-room of the other. While the operator is at work in the wet-plate room, the tank marked T gives a water supply. The supply of water is obtained from the street main. Room C is devoted to retouching.

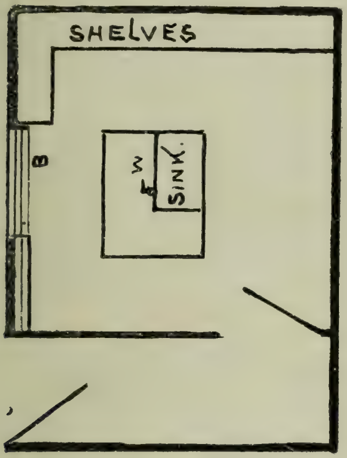

Fig. 5.

Figure 5 represents the dark room recently fitted up by Douglass, Thompson & Co., for the use of amateurs. It will be seen that it is somewhat unusual in its character, having a passage all round the sink and table on which the developing is done. The light is furnished by a 30-inch window, closed with a single sheet of green glass, backed by a supplementary sheet of orange. When wet plates are used, orange glass alone is employed; at other times both frames are used, so as to bring both glasses into the window. Double doors prevent the entrance of light when a person passes in and out. One part of the room, and part of another, are fitted with shelves for the storage of chemicals, bottles, etc.

OBITUARY.

GEORGE KENDALL WARREN.

We have before us a copy of the *Lowell Weekly Times*, containing an account of the death of G. K. Warren, the well-known photographer, of Boston. His death was due to an accident. He was about to take a train for Boston, and was struck and instantly killed as he attempted to cross the track at College Hill, on the Boston and Lowell Railroad, on Saturday afternoon, November 29th.

Mr. Warren was a native of Lowell, where his father held a prominent position for many years. He was a pupil of the Green School and in the High School in 1845, and was a genial, hearty fellow, beloved by everybody who knew him. From Lowell he went to Cambridge, and became the photographer for Harvard, Yale, Tufts, Princeton and other colleges. Soon after he opened a studio in Boston, on Tremont street, above Boylston, and afterward on Washington opposite Jordan & Marsh's. His studio was the resort of many noted men and women; Longfellow, Whittier, and many public men and statesmen were among his clients. Mr. Warren was not only a photographer but an artist, and the evidences of this artistic feeling were seen in his work. His age was 51 years, and he leaves a wife, three sons and two daughters to mourn his loss.

Herr Himly had occasion to photograph some writing executed with violet aniline ink, but could get no impression on his sensitive plate. With one of Dr. Vogel's azaline plates the case was different, a vigorous negative being obtained at once. A drawing made on yellow paper was also copied without difficulty.—*Photo. News.*

LANTERN SLIDES AND HOW TO MAKE THEM ON DRY PLATES.

BY JAMES E. BRUSH.

Paper read before a special meeting of the Society of Amateur Photographers, Dec. 23d, 1884.

I CONSIDER a lantern slide the finest production of photography, and the process of their manufacture to be one that particularly recommends itself to amateurs. All the manipulations can be carried on in the evening, with much greater rapidity as well as economy than any other method of producing pictures. There is no more pleasant occupation than that of showing by the aid of a lantern the result of your work to your friends, and it is sure to awaken an interest which does not always attend an exhibition of silver prints, particularly when *home-made.*

A perfect lantern slide must possess two qualifications, viz.: absolutely clear glass in the high lights, and, when held up to the window with a ground glass or other suitable background, full and distinct details in the shadows.

For contact printing the following should be provided:

1 deep printing frame.

1 glass pan, 4 x 5, for developing.

2 " pans, 5 x 7; as these will hold two plates each at a time, they will often be found useful when fixing and clearing. It often happens that the first plate is not entirely fixed by the time the second is ready to be placed in the hypo.; hence a large tray is quite essential.

A German student or other kerosene lamp with a porcelain shade is the best for making the exposure, and a developing lantern yielding plenty of diffused orange-colored light is essential for the dark room.

In the dark room the negative is now placed in the printing frame, the box of sensitive plates opened; one is then laid on the face of the selected portion of the negative most suitable for a slide; next hold the frame up in front of the lantern to get the correct adjustment of the slide with reference to the picture, and carefully keep the plate in position while laying the frame down to put in the pressure board. It is now ready for exposure, which should be made with the frame fixed at a distance of about twelve inches from the lamp. Considerable latitude is allowable in the duration of exposure, provided the developer is made to correspond to it. A long exposure, from fifteen to forty seconds (according to the density of the negative), with a dilute developer, is the most suitable, yielding warm brownish tones with fine detail in the shadows. After the exposure is made the plate is developed in the dark room with the following solution:

No. 1, Iron.

Water	4 ounces.
Sulphate of iron	1 "

Dissolve, filter, and add 5 drops of sulphuric acid.

No. 2, Oxalate.

Water.............	8 ounces.
Sulphite of soda....	120 grains.
Citric acid.........	15 "

Dissolve and add neutral oxalate of potash, 2 ounces. Test with blue litmus paper; if it remains blue add a few drops at a time of a strong solution of citric acid until the paper turns faintly red, then add 50 grains of citric acid, 10 grains of bromide of potassium, and filter.

No. 3, Fixing.

Hypo.	1 ounce.
Water................	5 "

To make developer, take of

No 1..................	1 part.
No. 2..................	4 "
Water...............	1 to 3 "

Development will be slow, and should be continued until the details are fully out and the image distinctly seen on the back of the plate. Wash the plate thoroughly under running water before and after fixing. Then immerse the plate for 30 seconds in the following clearing solution:

Alum.............	160 grains.
Water.............	5 ounces.
Sulphuric acid......	2 drams.

Again wash the plate thoroughly, and finish by holding it under the tap while passing over the face of it a broad camel's hair brush, which will remove any adhering particles or sediment.

The plate is then placed on a negative rack, and should be thoroughly dry before being mounted. Abandoned negatives with the film cleaned off by boiling in water can be utilized for the protecting glasses by being cut up to the proper size. Care should be taken to use glasses free from spots or bubbles.

SOME OF THE ADVANTAGES OF AMATEUR PHOTOGRAPHY.

BY F. C. BEACH,

President of The Society of Amateur Photographers, N. Y.

So much has been written about photography in general, that it is surprising so little has been said regarding the part taken by the amateur. To take photographs for the mere pleasure afforded, is certainly attractive, and it is therefore no wonder that hundreds (now that two-thirds of the trouble which formerly was necessary is avoided) are commencing the practice of this most fascinating art.

With the general introduction and use of dry plates, photography has become so easy to acquire, that it presents to the amateur innumerable advantages. Fitted out with a good camera and lens, he is able to make a complete photographic record of any interesting pleasure trip or journey, that will serve in after years as a vivid reminder of any peculiar incidents which occurred.

Again, by constant practice, he soon acquires a decided habit of observation of nature and of things about him, which would be left uncultivated, were it not for the fact that after a while he learns to know that it requires some study to make a picture, and while he may take many negatives, he finds very few turn out excellent pictures.

The necessity of studying what is likely to make a good picture tends to cultivate his powers of imagination, and as these grow more acute he is benefited, and reaps an advantage which he never would have obtained had he left photography alone.

He is also required to obtain some knowledge of chemistry; a very little is necessary, but it is an advantage.

Optics, as applied to photographic lenses, has to be learned.

Many times the amateur, by his peculiar position in society, has the advantage of obtaining pictures of localities, valuable documents, or hidden curiosities which would never fall to the lot of the regular photographer.

Sometimes, in emergencies, his camera being on hand ready for immediate use, is invaluable. I have known of fires, scenes on shipboard, and dying friends being photographed when it was impossible to obtain the services of a photographer.

The amateur, by his roaming tendency, necessitated by traveling about, has many more opportunities of catching something valuable and interesting than is usual with those practicing photography for a living.

The advantage of being able to enlarge small pictures by means of some of the modern processes, and of utilizing a magic lantern for this purpose, is often overlooked. It is becoming an important question with many whether they shall not abandon the heavy, large cameras and plate-holders, and go back to the small lantern size, which, by its lightness and compactness, is so much more easily handled. It is evident that instantaneous bits can best be obtained by using a small, compact apparatus, which can be carried disguised under the arm, and so long as the negative obtained is sharp, it may be easily enlarged to any desired size. A still further advantage to the amateur of the lantern-sized plate, is the fact that lantern slides can be easily made by contact, and, as was recently remarked by Mr. James E. Brush, nothing is finer than a good lantern slide, and there is no more pleasant way of showing your work to your friends than through their medium, in the magic lantern.

To secure all the advantages of photography, the amateur must acquire knowledge of what is going on about him, and he cannot do this in any better way than by consulting or having by him some of the prominent photographic journals, such, for instance, as ANTHONY'S BULLETIN, or any other paper which comes to be recommended to him.

He should also become associated with the best photographic societies, either amateur or professional, where all that is latest and newest pertaining to photography is discussed and shown.

It is surprising to note the improvements in apparatus which occur each year, and the small amount which the apparatus is sold for. I recently came across an advertisement where it stated that a photographic outfit, complete, with dry plates, but, I suppose, without tripod, including printed instructions, was offered for sale for the large snm of sixty cents. Surely, if this was perfect, it would afford the advantage of photography to the millions. I have omitted to state many other advantages which photography affords the amateur, for the reason that it would require too lengthy a statement at this time. It is only by the continual practice of the art that its many advantages become apparent.

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COOPER'S DEVELOPER—A CORRECTION.

ON page 24 of the last issue of the BULLETIN will be found a note from Mr. Cooper on his developer. By a mistake of the printer an erroneous construction has been given to one of his sentences in the description of the formula. The sentence reads: "This developer becomes muddy, &c.," when it should read, "This developer *does not* become muddy, &c."

There is also a mistake of a letter in the first part of the note, sulph*a*te of soda being given when sulph*i*te was intended. As the note came to us very late, these errors escaped our notice. —[*Editors of* BULLETIN.]

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PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

January 6th, 1885.

PRESIDENT NEWTON in the chair.

Usual vote of thanks for journals received.

A letter from the Secretary of the American Exhibition in London, in 1886, was read.

Mr. GARDNER—The subject for this evening is "Photographic Ethics," on which Mr. McGeorge will read a paper. At the next meeting Mr. S. L. Spedon will give a chalk talk. This gentleman will give illustrations on the blackboard of the different methods of posing. The subject will be "Photographic Posing." Prof. Laudy will also speak at that meeting, but has not decided on what subject.

It will be remembered that the Executive Committee presented the names of a number of books at the last meeting, to be added to the library, and a resolution was passed that the books spoken of, that were not already in the library, should be obtained. This has been done.

Paper by Mr. McGeorge, on "Photographic Ethics," was then read.

President NEWTON—If there are any remarks to be made on the paper or subject, an opportunity will now be offered. It is quite an interesting subject. From what little experience I have had, it has never occurred to me that photography has had a direct influence upon my morals, but I have no doubt it has had a powerful influence ; and I would recommend that every theological student be supplied with an old-fashioned nitrate bath and a bottle of collodion, for the purpose of finding out how many modern Jobs there are.

Mr. PARTRIDGE—That suggestion would be an exceedingly good one, but even if one could go so far as to introduce modern dry-plate outfits into a theological seminary, the seminary would be emptied of students inside of six weeks. I don't think it would be possible to raise a couple of ministers, under any circumstances, if they had anything to do with the chemical part of photography any way.

Mr. GRENIER—There are some very good points in the paper read this evening. To do one thing and be the master of it. When one is master of one particular thing, he can leave it for awhile and turn his attention to something else, and become master of that.

Mr. PARTRIDGE—Among the books which were recommended to be added to the library was a Dispensatory of the United States. I find that a copy of the edition of '73 is in the library. While it is desirable to have one of the older editions, we are not in proper condition to go on with chemical work without one of the latest editions, and I would make a motion that the Committee be empowered to get such an edition as may seem best to them, either the United States or the National, whichever is the latest.

Motion carried that the Committee see that an edition of the National or United States Dispensatory is procured.

Mr. PARTRIDGE—It is less known among non-professional people than it should be. No person connected with the art can afford to be unfamiliar with it. In every department of chemistry, and all sorts of chemical preparations used in the art, there is a fund of information there which, if more generally known, would save thousands of dollars to people engaged in manufacturing operations. It is invaluable to the photographer. When any chemical is mentioned, it gives not only an idea of it, but all its effects and the scope of its use, and probably some hints of the method in which it should be used.

Dr. EHRMAN—If that book is by Wood & Bates, it is a book which should be in the hands of every photographer. It is of immense value, because it gives the preparation of chemicals with all the equations and formulas distinct, and so that every one can understand them. I bought a copy about a year ago for seventy-five cents, which, when new, cost $12.00.

Mr. ROCHE—There is one book I have not heard mentioned, Storer's Dictionary of Solubility, which gives an account of the solubility of every chemical used in photography or outside, from A to Z.

Mr. MASON—I presume it has not been mentioned because it has been out of print for some time. Mr. Storer has been contemplating writing a more extended work, but has not done so. I have a copy at the hospital.

Dr. EHRMAN—There is a work in German, an almanac, entitled "Almanac for the Practical Chemist."

Mr. GRENIER—I possess about seventy-five volumes of an encyclopedia. I think it is very valuable, and if the Association would subscribe to it—it costs only 50 cents per volume—I think it would be a great advantage. They are published in English, French and German at the same time.

Mr. MASON—In my work I have found that a man cannot do but one thing at a time. While he is doing that, if he leaves it and forgets it while doing something else, the first thing is liable to be overdone. I find it somewhat convenient to always have a clock where I can see it, and if I did have one, I might forget to look at it. About a year ago I had a visitor from Massachusetts, and I stated to him the want of something which would not allow the photographer or anybody to forget the work he was doing, and I thought a clock might be so arranged that he could set it at any time in advance, and set a signal so that the clock would call his attention to the work. I received this from him—a clock which is very simple and very easily made. I have not tested it, but I have no doubt it will work well. It has an ordinary movement, and around the face of the clock there is a band of metal, upon which are placed studs—small pieces of metal; connected with them is an alarm, which the hand strikes when it reaches the point set. The extreme simplicity of the whole thing renders it possible for any person to make one.

Mr. ROCHE—In developing, I put my plate in a dish, touched a little spring, and the dish kept rocking from side to side; another plate I kept in a dish entirely still. The one that was developed in the dish that rocked with the clock movement, was over-developed; the other one, developed in the dish that was perfectly still, was completely spoiled.

Dr. EHRMAN—This clock would be very useful to me in my work. I use an ordinary instrument, such as is used to measure time by musicians, and that little instrument is of immense value to me. It got out of order and my timing was incorrect.

Mr. NEWTON—I used to find a little sand glass, in measuring the time taken in coating a sheet of albumen paper, very useful. It took three minutes to empty the glass. I put the sheet of paper on the silver bath, turned the glass over, and when the sand had run out I took the paper off. Anything that assists the photographer in measuring time or water is good. One might perhaps get the eye trained into measuring an ounce of water or alcohol into a tumbler, but I hold that it would be better to use a graduate.

Mr. GRENIER—If that sand-glass ran out and you did not notice it for half a minute, what would happen?

Mr. NEWTON—It would do no harm. A half minute more than three minutes would not make any difference, but I would not let it remain for a shorter time with the sand-glass to regulate the time.

Prof. LAUDY—This clock might be simplified if the electrical part of the contrivance had been left out. There is certainly an advantage in having what are known as tell-tales. In a nitro-glycerine factory I visited, there was a thermometer with three markings—the first, "all right;" the second, "danger;" and the last, "get out." This thermometer was a tell-tale to those men, for they knew by the state of it whether it was safe for them to remain in the place. So this clock would be a sort of tell-tale to the photographer.

Dr. EHRMAN—This clock has been brought before the section to receive the judgment of the members present, and I wish that the general judgment would be favorable to it, because there are many favorable points about it. When artificial light is used, in cases where long exposure is needed, a contrivance like this is of great value.

Motion made and carried that a vote of thanks be given to Mr. Mason for presenting the clock before the meeting.

Adjourned.

ABOUT THE DURABILITY OF BROMIDE OF SILVER GELATINE DRY PLATES.

BY L. BELITSKI.—(*Continued.*)

FURTHER, it is still to be considered that the highly sensitive bromide of silver gelatine emulsions are mostly produced with the aid of ammonia, and that this has an essential influence upon the properties of the emulsion. The organic ingredients of the gelatine are assisted by the ammonia in their reducing properties. *If the washing of such an emulsion is not thoroughly complete, so that it retains an alkaline reaction, there is still one effective factor extant to endanger the future durability of the dry plates.* We have made a similar observation in the wet process; injurious organic combinations formed in the silver bath, producing fog upon the plates; sunning of the alkalized bath precipitated the injurious matters combined with silver, or they were oxydized by permanganate of potassium, becoming likewise *harmless.* Although the great sensitiveness of the plates and certain ingredients of some kinds of gelatine, as well as the manner of preparing the emulsion, and when not thoroughly washed their final alkaline reaction, may be the agents in destroying the plates; these are always only secondary agents, while *air and moisture* remain the principal factors, which we will now submit to a little closer consideration.

Strictly taken, it is not correct to speak of an injurious effect of the atmospheric air upon bromide of silver gelatine plates, no observations or facts being known, so far as I know, that the constituents of pure air, oxygen and nitrogen, should have acted injuriously upon the same. But the case changes when we consider the small quantities of certain gases which are oftentimes mixed with the air in variable quantities.

The impurity of the air has already played an important rôle in the wet process.

More than twenty-five years ago, when I made paper negatives, while at a watering-place I fixed up a dark room in a mill. This was situated near the water-wheel, and was greatly infected from the obnoxious smells emanating from the brook. In this room I was not able to develop a decent negative. The exposed iodide of silver paper placed in a dish with gallic acid showed a picture, it is true, almost instantaneously, but it disappeared also just as quickly in a dense fog. The only thing I could do then to get relief was to leave the room and that bad atmosphere. Some years later, while working with collodion, something similar happened to me several times in rooms that were near stables, sinks, etc. Generation of a little chlorine gave relief. In a room where the gas was leaking I was also unable to obtain a collodion negative; the same thing took place in a room which was newly painted. Sulphuretted and phosphuretted hydrogen, ammonia, the odor of volatile oils and varnish, were very injurious to the wet process, *although the plate came in contact with the impure air for a few minutes only.* But the plate was wet, and in a wet condition the different matters have only a superficial action.

Now that we work with dry plates, it has been generally understood that nothiug injures the plates but light. This is a great mistake, as the dry silver combinations, although much slower, will be chemically changed by said gases. Gases are but fluids, and if bright metallic silver blackens in the air, why should not dry bromide of silver decompose under prolonged action, as the moisture changes almost instantaneously sulphuretted hydrogen into sulphide of silver? Moreover, our sensitive bromide of silver is not fully insoluble in water, and sufficient moisture is always present, for the best washed bromide of silver emulsion has always a strong metallic taste, just like a weak solution of nitrate of silver.

If we now consider that paper wrappers and even pasteboard boxes are not only penetrable by gases, but that they even absorb and then transfer them to other bodies; further, that the absorption capability for gases is particularly and in a much higher degree attractive in black materials than white ones, it will be more and more apparent that the air, as it is oftentimes in our dwellings, has a damaging influence upon highly sensitive bromide of silver. If the great sensitiveness and the whole chemical condition of the bromide of silver emulsion film were the sole cause of the gradual decomposition, the change would then take place uniformly over the whole coating of the plate; but as the edges of the plates suffer mostly from this formation of fog, the principal cause must come from another source. A very interesting proof of the damaging effect of certain gases on the plates I had last August. The carpenter had made some drying racks for my emulsion plates, and with best intentions had oiled the wood. The odor of the linseed oil awakened my suspicion, and I exposed the racks for some days to sunlight. They were used afterwards and nothing further thought of them. A few days subsequently I obtained on some of my plates after developing on two opposite corners, dense black spots, at least one c.m. wide. In the beginning I was puzzled to know the cause of this, but when I discovered a regular repetition of these spots on the very same parts of the plate I tried another rack, to find again the same reduction of silver.

These oiled racks were to all appearance thoroughly dry, but a strong smell of oil could not be denied. This odor was therefore sufficient to bring about in less than twelve hours a complete reduction of the bromide of silver during development.

Considering this observation a little closer, and remembering that drying fatty and volatile oils absorb oxygen, we have a very interesting case here, analogous to the developers, which absorb oxygen to a great extent also. In developing the negative, the bromine of the bromide of silver takes the place of the oxygen, and the developer takes up the bromine and liberates the silver. The odor of the oil, therefore, acts like a gaseous developer upon the bromide of silver of the dry plates.

Very soon after, many packages of dry plates, from a longer storage, became foggy on the edges. I suspected a yellowish-brown wrapping paper used for this purpose, having a distinct resinous odor; but as it is difficult to obtain wrapping paper made of better or other materials, all my researches as yet have had no successful result. For some time thereafter I used waxed paper, with the intention to shut off the outer air; but as this paper was not soaked in strictly pure wax—this being mixed with different substances—the black spots again made their appearance after five months. Tinfoil may be used successfully, but the comparatively high price might prevent its general adoption.

After all the experience we have had with the wet process, showing that the action of certain gases and vapors for even a minute may destroy the sensitive film, it would be wonderful if dry plates, wrapped up solely in paper and pasteboard, should *under all circumstances* keep good for weeks, months and years, as different gases oftentimes found in our dwellings may produce fog upon the wrapped plates. This may be put down as a fact, although it is probable that not all plates have the same sensitiveness to these destructive elements. But the apparent action of these gases is aided largely by moisture.

[*Translated from* "*Deutsche Photographen Zeitung*" by H. D.]

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DEVELOPMENT OF CARBON PRINTS.—M. Le Cornet (of Saint Denis de la Réunion) has communicated to the French Photographic Society a formula for the development of carbon prints. He uses a concentrated cold aqueous solution of ammonium sulpho-cyanide.—*The Amateur Photographer.*

[*From "The Photographic News."*]

HYDROXYLAMINE USED AS A DEVELOPING AGENT.

BY ARNOLD SPILLER.*

NEARLY two months have elapsed since Herr Carl Egli and myself published in the *Photographic News* the suggestion to use hydroxylamine as a developing agent, and I take this earliest opportunity to communicate to the Society the results of my further experiments. As hydroxylamine, prior to our publication, had not been introduced into the photographer's laboratory, perhaps it will not be out of place if I describe briefly the properties and preparation of the compound under consideration.

Hydroxylamine was discovered by Lossen, when investigating the intermediary products of the reduction of nitric acid to ammonia. This compound, which is represented chemically by the symbol NH_3O, is formed on the ammonia type, by the replacement of one of the atoms of hydrogen by the hydroxy-radical HO, as is seen in the following graphical representations:

$$\begin{array}{cc} \text{Ammonia.} & \text{Hydroxylamine.} \\ N\left\{\begin{matrix}H\\H\\H\end{matrix}\right. & N\left\{\begin{matrix}OH\\H\\H\end{matrix}\right. \end{array}$$

Like ammonia, it is a strong base, capable of forming several salts. It has not yet been obtained in the free state, but it can easily be produced in an aqueous solution. It possesses the somewhat remarkable property of behaving both as an oxidizing and as a reducing agent. Perhaps no better example of its reducing action can be taken than the decomposition of silver bromide in the presence of caustic alkali, whereby metallic silver, alkaline bromide, and nitrous oxide or laughing gas are produced.

The reaction is represented by the following formula:

$$2NH_3O+4AgBr+4NaOH= \\ Ag_4+3H_2O+4NaBr+N_2O.$$

Another important fact, in considering the properties of hydroxylamine, is that it does not absorb oxygen, even in the presence of alkali; thus, during the process of development, there need be no fear of the developing solution becoming decomposed from contact with the atmosphere.

The preparation of this compound has not received much attention from chemists, and thus the process generally adopted is the same as that originally proposed by the discoverer, namely, the reduction of nitric ether by tin and hydrochloric acid. When this method is resorted to, a large proportion of the hydroxylamine is converted into ammonia, and thus the yield is comparatively small. Dr. Divers has recently published in the *Journal of the Chemical Society* a series of experiments on the formation of hydroxylamine from nitric acid. This investigator finds that a large yield of the desired compound is obtained by the direct action of tin and hydrochloric acid on nitric acid; in one experiment, 87 per cent. of the nitric acid was converted into the base. It may be of interest to know that the hydrochloride, or hydrochlorate, is already in the market, but as this compound has hitherto only been used for scientific investigations, the price is at present rather high, and would debar the professional photographer from adopting this method in his every-day practice; but there is very little doubt that, should a demand arise, the substance could be produced at a reasonable price.

With this, as with other developers, there is some difficulty in prescribing a definite formula, but the following, which is a modification of one recently described in an editorial article of the *Photographic News*, may be taken, I think, as a fair standard, and has given excellent results with certain brands of plates.

The following solutions are required:

A.	Hydroxylamine hydrochloride	30 grains.
	Alcohol	1 ounce.
B.	Caustic potash	1 dram.
	Water	1 ounce.
C.	Potassium bromide ...	20 grains.
	Water	1 ounce.

The ingredients used are in principle similar to those employed with pyro. Caustic potash takes the place of ammonia, for the latter alkali is not sufficiently powerful to assist the reduction of silver bromide. The soluble bromide is used, as with pyro or oxalate, to restrain the action of the developer.

To develop a quarter plate with the above solutions, take half a dram of A, 40 minims of B, and 10 minims of C, diluted to 1 ounce with water. The exposed film is plunged straight into the developer without previous moistening; the process proceeds rapidly, and is completed in about five minutes.

The advantages claimed for this developer are:—Wide latitude of exposure, non-deterioration of the solution from external sources, and absolute freedom from stain, a gain that cannot too strongly be accented, especially at this time of the year, when printing is so slow.

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* Read before the Photographic Society of Great Britain.

Against these important advantages I should state that there is a minor objection, and that is the liability to cause reticulation, with plates prepared with soft gelatine, from the softening of the film by the caustic alkali, and the evolution of the nitrous oxide gas from the decomposition of hydroxylamaine.

This developer is particularly suitable for gelatino-bromide paper, for while the resulting tone is apparently identical with that obtained by ferrous oxalate, there is no after treatment with acid required to remove the brown stain which is so objectionable when the latter is employed.

Gelatino-chloride is very amenable to this developer, and by varying the alkali used, different tones are produced. Thus, potassium and sodium carbonates produce a sepia-brown tone; the same, but modified by the addition of a trace of ammonia, give a chocolate; and ammonia *per se* a brilliant purple.

A curious dichroic image is obtained with ammonia developer by reducing the alkali therein to one-fifth the normal amount, and exposing the plate about five-fold; the deposit, when moist, appears of a brilliant chestnut color, which dries to a deep purple. This same purple image again appears as a brown in gas-light. My experience with gelatino-chloride is confined to only one make of plates, so that probably the tones would be somewhat modified when this developer is used with other brands; for Dr. Eder has already shown that films prepared according to various methods often yield different tones, even when the same developer is used.

For the development of gelatino-chloride films, the following solutions are required :

D.—Hydroxylamine hydrochloride	15 grains.
Alcohol	1 ounce.
E.—Potassium Carbonate	6 drams.
Water	1 ounce.
F.—Ammonia .880	1 dram.
Water	1 ounce.

A normal exposure for use with this developer is about ten minutes, one foot from a fish-tail burner. For a sepia-brown tone take half a dram of D, 40 minims of E, and 1 ounce of water. For chocolate tones the above mixture, to which has been added 1 minim of F. A purple image is obtained with half a dram of F and half a dram of D, diluted with 1 ounce of water. To obtain the dichroic tone, expose five-fold normal, and develop with half a dram of D, 6 minims of F, to 1 ounce of water. The latter solution will probably prove useful for the development of gelatino-chloride prints, for I find that by backing a thin transparency of the dichroic kind with paper, a picture possessing a beautiful warm brown tone is obtained.

In advocating the hydroxylamine developer for gelatino-chloride, I claim freedom from stain, density of deposit, and variation of tone. It should be remarked that as the alkalies used are comparatively weak, no reticulation of the film is produced when the small proportion of alcohol included in the formula is used. In conclusion, I beg to express the hope that photographers will give hydroxylamine a fair trial, and communicate the results of their experience.

[*From " The Photographic News."*]

THE HYDROXYLAMINE DEVELOPER.

Many persons are now experimenting with the hydroxylamine developer of Egli and Spiller, and among the most recent workers in this direction may be mentioned Herr Scolik, of Vienna, who read a communication on the subject at the last meeting of the Vienna Photographic Society.

In the first place, Scolik tried the original formula, and the image developed slowly, and was rather weak. Scolik also found that, to obtain the same vigor as with pyrogallic acid, a longer exposure is required. He, however, by leaving out both bromide of potassium and citric acid, obtained much better results, and the following is his formula :

60 parts of water.
3 " stock solution of hydroxylamine hydrochlorate (1 and 15 of water).
5 " stock solution of caustic soda (1 and 8 of water).

Under these circumstances the image appears more quickly than with pyrogallic developer, and well graduated vigorous negatives are obtained—in fact, results much resembling wet plate negatives.

If only three parts of the hydroxylamine are used, the developer is too weak for general use; but five parts of the solution may be used when a short exposure has been given.

Too much soda must, according to Scolik, be avoided, as it causes the films to frill or to blister; but these troubles may be generally avoided by adding alcohol towards the end of the development.

In commenting on the present high price of hydroxylamine salts, Scolik remarks that a reduction may be expected; and according to present prices, he estimates the cost of the various developers as follows:

Pyrogallic developer, with glycerine	1.2
Potash developer	1.4
Iron oxalate	1.5
Hydroxylamine developer	5 to 8

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[*From "The Photographic News."*]

FORGOTTEN PROCESSES.

BY F. H. CARTER.*

PHOTOGRAPHY comes to me only as a rare and valued amusement, in which I enter into the results of the labors of others without in any way contributing to them. It is open, however, to me to think over and to marvel at the progress that photography has made. Men are not now old—in the modern use of the word—who saw its birth as a science; but it had prior to this a long record of forgotten processes. It did not spring full-armed from the head of any inventor, like the block-making machinery at Portsmouth, which is probably unique, as no improvement in it has been found possible since it was first designed.

There were heroes before Agammenon, but they had, we are told, no Homer to record their deeds; so it is possible that others may have seen visions and dreamed dreams before Fabricius, in the early part of the sixteenth century, seeking the elixir we should all be so glad to find, to confer perpetual youth, threw some sea salt into a solution of nitrate of silver. He noted that the precipitated chloride of silver, which he found white as milk, became black by exposure to the sunlight. He recorded the fact in his "Book of Metals," published in 1536, but did no more. What bearing could such a thing have on the elixir of youth? Scheele, in 1777, re-discovered the fact, and in 1780 Professor Charles, the inventor of the hydrogen gas balloon, turned it to practical use by spreading a solution on paper. He then projected on it a strong beam of sunlight, with the head of one of his pupils interposed, and found that the part exposed became rapidly darkened, and following the outline of the head, the first silhouette was produced—the parent of those fearful and wonderful objects in black paper which are still occasionally to be met with, and were supposed to represent the grandfathers of the present generation.

It is a long leap from Professor Charles to Isidore Nièpce and Daguerre. The former, as an independent worker from 1817 to 1826, and afterwards in partnership with Daguerre, discovered that bitumen of Judea, if spread thin on metal plates and exposed to sunlight under a print or similar object, became white in the exposed parts, and insoluble in essence of lavender. Subsequently, he etched the bare metal with acid, and named the process heliography. Meanwhile Daguerre had been working out his own idea, still with bitumen; but, by one of those happy accidents—which only genius appropriates—he chanced, it is said, to lay a silver spoon on a metal plate which had been treated with iodine; lifting it afterwards he discovered an image of the spoon on the metal. From that time bitumen was abandoned. Silver plates were exposed to iodine vapors and treated at first with petroleum and afterwards with mercury for a developer; and on the 10th of August, 1839, Daguerre demonstrated his process before the Institute of France, and photography became a fact. Paul Delaroche, who was present, is said to have exclaimed, "Painting is dead from to-day;" but still it lives, and will never be killed by photography, for that deals only with the objective; the imagination in it has no place; it cannot "give to airy nothing a local habitation and a name;" and while poets dream and ideal beauty beckons, the painter will interpret them as best he may. It detracts nothing from the title of Daguerre to a place on the scroll of fame that the daguerreotype must be classed with forgotten processes. So beautiful were its results, that they will always be regarded with interest, and it is possible that even now curiosity may here and there still cause it to find votaries; but from this begins the era of forgotten processes, for where now are the amphitype and authotype of Herschel; the calotype of Talbot; the energyatype of Hunt; the coffee process, the tobacco process, the Beechy process, and hosts of others, dear to their discoverers, but to few besides? Where are last winter's snows?

But the world owes a large debt of gratitude to men like Robert Hunt, who gave time and thought and money to the advance of this beautiful art. A few names stand out with especial prominence. Claudet, who in 1841 discovered the use of bromine as an accelerator for daguerreotype plates, and made portraiture possible; Talbot, who invented the calotype process; Herschel, the astronomer, who discovered the use of hyposulphite of soda as a fixing agent; and, greatest of all in results, Scott Archer, who in 1851, with the generosity of a noble mind, gave to the world, free and unfettered, the collodion process; and although this, too, has been superseded by the gelatine process, the subjugation has not been complete: the two Richmonds still remain in the field, and if the former is vanquished, it still retires with strife. And now what shall be said of the future? Has perfection been attained, or are there still worlds to conquer? If we look at the work of the masters of the art, some of whom are present, and whose blushes I will spare by not naming them, we might think the last page was written, and that nothing more remained to be done. But it is those whose work is the best who see room for improvement, and who still go on and strive for perfection yet unobtained. Still remains the dream of photographing in colors, more a wish than an expectation. But the constantly advancing uses of photography are no dream. The Woodburytype process enables portraits to be multiplied to any extent without fear of fading. The photogravure of Goupil makes collectors of engravings despair; for the various "states" of a plate can be so exactly reproduced that no specimen can now be looked upon as unique if it has been in their possession. And its latest application, stellar photography, is perhaps to some the most interesting of all. The mind reels in contemplating the awful depths of space, where worlds in myriads spangle the darkness like golden sands, or nebulæ in fantastic forms, the raw material of unformed systems, perplex the astronomer.

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* Abstract of paper read before the Photographic Club.

Photography is finding its way into book illustration, and it may be that, before many years are past, wood engraving may be driven from the field by its newest rival, which is ever seeking new worlds to conquer, and become a forgotten process. If, as it says in "Locksley Hall,"

> "Science moves but slowly, slowly,
> Creeping on from point to point,"

so far as photography is concerned, it makes good its advances, and these are due in no slight degree to the forgotten processes to which reference has been made.

THE "*British Journal Almanac*" and "*The Year Book of Photography*" have just arrived, and are filled with most valuable articles; the illustrations by new processes are particularly fine.

[*From "The Photographic News."*]

THE STAINING OF BACTERIA FOR MICRO-PHOTOGRAPHIC PURPOSES.

BY EDGAR THURSTON,

Curator of the Anatomical Museum, King's College, London.

BY means of micro-photography, very faithful representations of the form and general grouping of bacteria can be reproduced, such as it is exceedingly difficult to delineate in a drawing, however artistically it may be executed. At the hands of only a few men has, however, the photographing of bacteria been really successful, and one too frequently sees the organisms represented as faint, indistinct bodies with ill-defined outline, and surrounded by a hazy zone, the first fault being due to unskilled execution of the staining processes, and the second to the employment of indifferent objectives and bad illumination of the object; on both which points special care must be bestowed, as nearly all bacteria require for their investigation high-power objectives.

Micro-photography, in its application to bacteria, must be dealt with under two headings: 1st, the preparation of the bacteria by suitable staining methods; 2nd, the process of photographing them; and I propose on the present occasion to deal with only the former.

It may be required to photograph bacteria under two distinct conditions, according as they are present—1, in the free state or in fluids; 2, in the organs and tissues of the animal body; and for each of these conditions a special mode of preparation must be adopted.

As examples of bacteria occurring in a free state, or in fluids, I may take, from among many, the various colored (chromalogenous) species of which colonies grow on the surface of eggs, meat, bread or potatoes; the putrefactive bacteria in decaying meat or vegetable infusions; the sputum (expectorated matter) from the lungs of a pneumonic or tuberculous person; or the blood of an animal suffering from splenic fever.

To stain such bacteria the following mode of procedure will be found the best:—Place a minute portion of the bacterial fluid, or of a bacterial colony, by means of a previously heated platinum needle, on the centre of two cover-glasses (.004-.005), and, laying one cover-glass over the other, squeeze them gently together between the fingers, so that the bacteria are diffused over their surfaces in a uniform layer. Then slip them apart and leave them to dry. After a few minutes, pass the cover-glasses rapidly through the flame of a spirit lamp, so as to fix the bacteria on the glass. Cover-glasses so charged may be kept for an indefinite time; and if an interesting growth of bacteria is met with, it is always well to reserve some specimens in this way for future reference.

For all practical purposes, it may be said that bacteria of which micro-photographs are to be taken must be stained with a red or brown dye, and by far the best medium is a saturated watery solution of vesuvine or Bismarck brown, which should be filtered before use. For precise work, it is always best to use a freshly-made solution, inasmuch as bacteria, torulæ, and fungi develop in it after it has been made some time, and their presence may give rise to an erroneous observation.

The cover-glass, with the bacterial surface downwards, should be floated on the top of the solution, and allowed to remain there for approximately an hour, though experience will show that the time required will vary according to the specimen of dye which is used. It is then removed from the solution, washed in water, and afterwards in a half or one per cent. solution of acetic acid, and allowed to dry—or, if time is an object, pressed between folds of blotting-paper—and its surface brushed with a camel-hair brush to free it from particles of dust, etc. It is then mounted in Canada balsam, and is ready for microscopical examination. The best form of balsam for mounting bacteria is that which is dissolved in xylol, which is very easy to work with, and does not abstract the dye from the bacteria. If the slide is to be examined with an oil immersion objective, the edge of the cover-glass should be sealed, when the balsam is dry, with Hollis' glue. If the various stages of the staining process have been properly carried out, the bacteria should appear deeply stained and sharply defined.

Turning next to a consideration of bacteria as they occur in the organs and tissues of the body, I may cite, as examples, the various infective diseases of man and the lower animals. The organs must first be hardened by one of the numerous hardening processes, of which the one I generally adopt myself is to place the organ, or a selected portion of it, for forty-eight hours in dilute methylated spirit (1-2), and then transfer it to pure methylated spirit, in which it may be kept for an indefinite time. When it is sufficiently hardened, sections must be made by hand, or with one of the microtomes. For photographic purposes the sections should be cut as thin as possible, for with thick sections a fogged picture will result. A perfect section, but one rarely met with, would be one which is of the thickness of a single cell throughout.

To stain the sections, they are placed in the saturated watery solution of vesuvine or Bismarck brown, and allowed to remain there about an hour, then washed with distilled water, and afterwards in a half to one per cent. solution of acetic acid, dehydrated in absolute alcohol, clarified in oil of cloves, and mounted, with Canada balsam, in xylol. The bacteria should appear as deeply stained bodies standing out in bold contrast with the diffusely and more lightly stained tissue elements. The specimen should be covered with an extra thin cover-glass (.004-.005), for, if a thicker cover-glass is employed, a high-power objective may not be capable of working through it. The thickness of the cover-glass can be easily gauged by Elliott's gauging machine.

The staining of bacteria, whether on the cover-glass or in sections, will be found, with a little care and practice, perfectly easy. The only difficulty is to hit off a mean between understaining and overstaining, so that the bacteria are neither too faintly nor too deeply stained; but this is easily overcome.

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[*From "The British Journal of Photography."*]

COLOR OF GELATINO-BROMIDE TRANSPARENCIES.

BY BENJAMIN WYLES.

GELATINO-BROMIDE, for the special work of transparency making, is perhaps as little in favor as any article so universally in use for negatives could possibly be, even for enlarging from. Its handiness has hardly compensated for its flatness and too great tendency to fog, unless used with extreme care. It has to give place largely to carbon and to other processes more or less, whilst for the lantern and decorative purposes only an operator here and there thinks of using it. Nor is the cause of disfavor hard to seek. The very sensitiveness that is so valuable for the negative is a stumbling-block where extreme clearness of the lights and force in the shadows is desiderated.

This state of things will, however, I venture to prophesy, even in spite of the admonition not to do it "unless you know," be greatly altered should the soda developer come as generally into use as it deserves. This agent puts at once into our hands the power of making from the same gelatine plate standing ready in the stock of every dark room either the softly-gradated negative for which it was intended or the most brilliant and forcible transparency it is possible to see, by simply substituting for the pyro. ammonia developer one of soda and pyro.

A few weeks ago, in this journal (it was November 14), the Rev. H. Victor Macdona gave a formula that answers perfectly well, namely, one ounce ot washing soda and eight grains of bromide of potassium to half a pint of water. One grain of dry pyro. to each ounce is named, but this I look upon as entirely a variable quantity. As might be expected, the same principle holds good as when ammonia is being used; the more pyro. the more density, and the restrainer being already mixed with the alkali, the power of the print is completely under control. By the addition of more pyro. or diluting the already mixed developer with the stock soda solution, the operator can do just what he thinks well.

So far, then, there is nothing new in what I have said, and it is only advanced as an introduction to what follows on a simple means of *determining the color* of the transparency. I think it will be pretty generally admitted that the tone or, strictly speaking, *the hue* of a gelatino-bromide transparency is anything but agreeable as it comes from the developing dish. Here are the means of altering it:—Supposing the transparency forcible and good, the operator may make it what color he wishes—within moderate limits, of course—but with a much wider average of choice than is usually supposed. The *character of the clearing bath determines the color.* To make sure of our ground, let us just rehearse the operations. The developing print is watched till the requisite force is slowly built up—much more slowly than with ordinary negative development—and pretty frequent rocking is necessary to prevent crapy marks, though there seems no tendency to bubbles sticking to the film, as with ammonia. When developed and fixed the plate is washed, and then plunged into a bath of acid alum to remove the discoloration, which is rather greater than with ammonia.

Of course, we all know that a number of acids are in general use in the formation of this clearing bath; but I am not aware that hitherto these acids have been formulated into a means of leaving the image with a series of special and definite colors. I say "definite" color, because one would suppose that exposure and a variety of causes went to produce the tint, and that, in fact, it was more or less accidental; whereas it seems determinable in a manner reminding one of the definiteness of the rigid tints awaiting one's choice in pigment printing. It may be expected that interesting results await experiments with acids other than those named here, such as sulphuric and formic; but I content myself with naming those tried, and the tints obtainable in each case, premising that in most instances a considerable number of plates were experimented with, and that there was no variation whatever, no one of any batch running into the color of any other batch, or anything tending towards it.

1. *Warm Red.*—This is obtained by a bath of iron with tartaric acid:

Alum	1	ounce.
Tartaric acid	1	"
Sulphate of iron	3	"
Water	20	"

Rather more water may be used. There is just a danger of the salts crystallizing on the film, though no harm is so done. Further dilution does not appear to affect the tint. The film is extremely non-actinic.

2. *Photographic Brown*—called thus for want of a better and more definite name. It is describable as something similar to a good-toned brown albumenised print, or like a warm brown carbon print—very unlike the range of colors usually associated with developed pictures on glass. The formula is as before, with the omission of the iron.

3. *Yellow Green.*—This also is so called for want of any really definite term. As all artists well know, there is no talking of color in set rigid terms; but this is wonderfully suggestive of the peculiar hue of sun-lighted foliage in the spring and early summer, running from whitish yellows through various degrees of yellow greens down to brown greens or green browns in the shade. I hope to try the effect of this on lantern slides from suitable landscape subjects. At present my experiments have been made on nothing less than whole plates:

Saturated alum solution	1 pint.
Muriatic acid (commercial)	1 ounce.

4. *Greenish Black* was the result from the commonly used alum and citric solution.

5. *Warm Sepia* was obtained as follows:

Saturated solution of alum	1 pint.
Glacial acetic acid	1 ounce.

6. *Black*, slightly inclining towards warmth, but very neutral, compared with the others. From Edwards' clearing solution (citric alum and iron).

7. *Cool Brown*, produced thus:

Oxalic acid	1 ounce.
Saturated solution of alum	1 pint.

I may add that the particular brand of plates used happened to be Marion's ordinary "Britannia," though it is not probable that the results would be materially altered with other makes.

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[*From "Deutsche Photographen Zeitung."*]

TREATING THE NEGATIVE WITH CHLORIDE OF SILVER.

BY L. BELITSKI.

By this sentence is understood the change of a metallic silver negative into a chloride of silver negative, that has taken place by development from the bromide of silver, which is easily brought back again into its metallic condition by the well-known developers.

This double change of the negative may for the moment appear to be without purpose, or as a kind of chemical play; but we will see that this operation has in certain exceptional cases a wonderful effect, and can be recommended, particularly as it is simple and so certain that nothing can be spoiled by its use.

With gelatine negatives, particularly those that have been intensified, it sometimes happens that they have a handsome, clear and even transparency, but give prints with more or less spots, requiring a great deal of time for retouching when it is at all possible, and when a larger number of prints is required. If such a negative is examined very closely, very faint yellow spots will be discovered, corresponding with the light spots upon the print.

At all events, it is evident that in badly washed negatives spots will appear during intensifying, where drops of the hypo-solution have penetrated the coating during drying. Another cause for these spots in the negative is also an insufficient time in the fixing bath. All this can be avoided if the proper attention is paid, but the photographer is oftentimes interrupted in his work, and after the appearance of the spots, a little advice may be of some value. In very faint or weak negatives, an improvement of the tone is also desirable.

The treatment with chloride of silver is of great value for such negatives, as these spots may be completely removed. This is done in the following manner:

The intensified or non-intensified spotted negative is placed in a dish with the following solution:

Alum solution (5 per cent.)	1 litre.
Bichromate of potash	10 grm.
Muriatic acid (C. P.)	20 "

These chemicals can also be dissolved in water instead of alum, but the negative will frill easily on account of the muriatic acid. It remains in the solution until it has a thoroughly yellow tint, which will take place in a few minutes. Now it is washed well, film side down, with changes of water until the latter remains colorless, and the negative is no longer yellow, but has a grayish-white appearance.

The dish containing the negative is now taken to a light room, the sun preferred, and exposed for a few minutes. If the chloride of silver negative is placed in the oxalate of iron developer, it will become black in a few minutes, returning again to its metallic state, and all yellow spots have disappeared. The washing following this is done in a quarter of an hour.

The chloridizing solution will keep any length of time, although its action will be slower with age; but then it can be renewed with a little bichromate of potash and muriatic acid, if a fresh solution should not be preferred.—*Translated by H. D.*

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[*From "The Photographic News."*]

HOW TO PHOTOGRAPH MICROSCOPIC OBJECTS.

BY I. H. JENNINGS.

Lesson VIII.—Preparing Objects for Photography.

Many microscopic objects are totally unfit for photo-micrography, as the beginner will soon discover if he attempts to photograph indiscriminately the objects in his collection. It does not follow, because the object looks very beautiful under the microscope, that it will yield even a passable photograph. It may look all that can be desired on the stage of the microscope; all its different parts may be defined clearly with diffused light, yet its color, or the strong contrast of one part with another, may be such as to render a photograph of it quite impossible. Take, for instance, an object mentioned in our first lesson, the tongue or proboscis of a fly; satisfactory photographs of this object are not common, simply because they have been taken from the specimens usually met with in collections, which have been prepared to give the best effect when seen through the microscope, where the strong contrast in depth of color between the lobes of the ligula and the thick portion of the maxillae and maxillary palpi is no defect, but positively an advantage. When such a specimen is photographed, its unfitness is clearly seen;

the thin, transparent lobes are usually much over-exposed long before the darker parts of the ligula have received their proper amount of light; in short, no exposure will suit this object as a whole. It is true a sort of make-shift may be employed, and fair results gained, by shading the transparent parts during exposure, keeping the shade in gentle motion all the time, during half or three-fourths of the exposure, when the whole may be exposed. It is far more satisfactory, however, either to select one of these tongues from a large number, or prepare one specially, so as to subdue these undesirable contrasts, and bring the whole object more into harmony as regards density.

The beginner in photo-micrography is strongly advised to make his own microscopic preparations. A microscope can never be much more than a pleasant toy if its possessor rely wholly on purchased slides. To own even a moderate collection of slides prepared by the professional mounter will cost a large sum of money, and when these have been examined a few times their interest is gone, and the microscope is laid aside for the want of objects to examine. But when the student prepares his own objects, his microscope becomes to him a continual source of pleasure and instruction. His slides, in the majority of cases, may not be equal to those professionally prepared, and they will certainly lack that exquisite finish which constant practice in their preparation alone can give; but for the purpose of study, and especially for photo-micrography, they may be equal to, or even better than, anything that can be purchased from the optician. Then, with practice, the student will so far improve that he will find his own preparations so much better for his special purpose, that he will rarely visit the optician's shop for slides, unless it be to purchase some object that cannot be procured elsewhere, or one which may be beyond his own powers to prepare. That there are such objects it cannot be denied; and we may perhaps place anatomical preparations in the list of objects better left to the experience and skill of the professional preparer. As the student will not require his objects to be mounted in fancy style, he may prepare slides of such diatoms as he can find in his walks, or obtain by exchange, small as these objects are, purchasing only the rarer forms, or such as are prepared especially as test-objects. Practice in preparing and photographing minute objects, like diatoms, is not only desirable, but necessary, to give the beginner complete command over his microscope and camera.

The apparatus required in the preparation of microscopic objects is neither cumbrous nor costly. The following list includes most of what the beginner will require: A spirit lamp; needles mounted in wooden handles; glass slides, 3 in. by 1 in. (these should be of plate-glass with ground edges); circles and squares of thin cover-glass, the thinner the better; solution of potash, commonly called liquor potassæ; methylated spirits; spirits of turpentine; some pure benzole, not benzoline; nitric, sulphuric, and hydrochloric acids; chlorate of potash; a bottle of balsam, or balsam and benzole; glycerine; gelatine; fine and coarse emery; a glass plate (preferably *plate-glass*) about a foot square, and one of cast-iron the same size, for grinding down sections of horn, bone or rocks; a pair of scissors; a sharp knife; a pair of forceps; and a dozen brass clips for holding the covers on the slides, will also be required.

It is best to keep the balsam in a bottle fitted with a wooden stopper, through which a glass rod may be passed. The end of the rod may be kept above the balsam when not in use. When it is required to take some balsam out, the rod can easily be pushed down until it just dips below the surface, and a small quantity taken out without soiling the neck of the jar. Corks should not be used, as they are apt to stick fast, and, by crumbling away, fill the balsam with small fragments which are difficult to remove. By keeping the glass rod always in the bottle, it will remain clean, which would not be the case were it kept elsewhere; and the learner will soon find that cleanliness is absolutely necessary in microscopic work.

Newly-purchased slides and covers are always dirty. Water will not always effectually cleanse them; they should therefore be washed in a solution of caustic potash, ammonia, or soda. This will free them from impurities; but the slides should afterwards be well rinsed in pure water, or some of the alkali will remain on the glass and prove as great a hindrance as the dirt.

Microscopic objects are mounted in three different ways: 1. Dry. 2. In a gum, such as balsam or dammar. 3. In some fluid, such as water, glycerine or alcohol. Dry-mounted objects being usually opaque, are not well suited for photography, unless the operator has more than common dexterity in the management of reflected light. In the case of very transparent objects, however, such as diatoms, dry-mounting is far the best, as the use of balsam or glycerine does much to obliterate fine markings, on which the interest of the object, perhaps, entirely depends. Balsam or dammar will most generally be used as the mounting medium, as these gums render an object mounted in them more transparent, and can be used in most cases where they exercise no solvent action on the preparation. Insect preparations, vegetable tissues, rock sections, crystals of various salts, are, as a rule, photographed to best advantage when mounted in balsam.

As insect preparations are of perhaps more general interest than any other, and are more easily photographed, we shall treat of preparing these objects for photography in our next lesson.

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[*From "The Photographic News."*]

HINTS ON POSING AND THE MANAGEMENT OF THE SITTER.

BY H. P. ROBINSON.

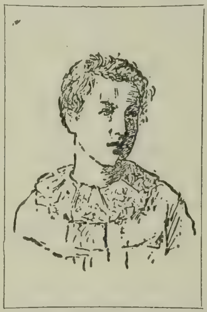
CHAPTER II.—THE HEAD VIGNETTE.

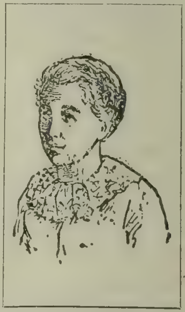
In the last chapter I left my man hanging, while I went off into a digression on studios and head-rests, turning him, indeed—as well as my chapter—into a "subject" quite other than that intended. This is bad art. A subject should never be left suspended. Years ago there was published a series of portraits of a famous actress as she appeared reciting Tennyson's sensational "Charge of the Light Brigade," a poem utterly unworthy of the great poet's genius, but which, however, still finds listeners, if not readers. There were seven poses in all, and the last of the series left the lady with arms extended in the very ecstacy of declamation; to make the series complete, and finish artistically, the photographer should have added another picture with arms down and left her in repose.

We will continue the consideration of how a head ought to be treated.

The first thing to decide when you see your sitter should be: "Which side of his face will make the best picture?" This consideration seldom gives an experienced operator any trouble. To one who is in the habit of observing, the sides of every face differ so much, and in such a definite manner, that a glance is all that is necessary to settle the question; but the young photographer will want to know how to select, and have some rule for the selection.

If you will look critically at a full face (or the photograph of a full face would be better, as it would enable you to measure), you will find that the eyes are not level—one is higher than the other. This is almost invariable, and is one of the peculiar instances in which nature insists on variety, even where uniformity would seem to be proper. If you take a photograph of the face in a three-quarter position, with the eye that is highest away from you, the unevenness will be still more visible; but if you take the other side of the face, and have the highest eye nearest the camera, the lower eye will seem to fall away naturally, through the effect of perspective. The same facts apply to the nose, sometimes in a very marked degree; but it fortunately happens, in nine cases out of ten, that the eyes and nose agree as to which is the best side of the face. When they disagree, the portrait is seldom satisfactory. The two illustrations are taken from different sides of the same face, and show which side should have been taken. In the one to the right the nose looks broken, and the eyes out of line; in the other these defects are not seen:





I keep an illustrated catalogue of all the portraits I take, and on looking through several volumes, I found confirmed a very curious idea that was stated in a note in the *News*. I found that about four out of five of the portraits were taken looking to the right, showing that I had in these instances chosen the left side as the best. Now, as both ends of my studio are equally well lighted, and it is no more trouble to take one side of the face than the other, it follows that, in my judgment, in four out of five cases, the left side was the best. If this is correct, the knowledge of it would be of some practical use to those who have to build studios in a confined place, with only one end available, to make it that end on which the left side of the face can be best lighted.

If your sitter is not in a good state to be photographed, and if it does not endanger the loss of him (this is a purely business consideration, which is out of place here), it is much better to postpone the sitting than to risk taking an indifferent portrait. The other day I saw that one of my sitters was not looking his best, and asked him if anything was the matter. "Well," he replied, "I've got a headache that ought to be good enough to split a planet into fragments, but I thought I would keep my appointment." Now it is a good thing to encourage sitters to be punctual, but I felt it right to send this one away for a day or two. My friend's description of a perfect and complete headache was as good as I had heard until another friend said he had got an effervescing mixture of sunstroke and neuralgia.

A sitter will sometimes want to be taken "naturally." His ideas of being natural—"just as I am, you know"—is to sprawl over the furniture. Perhaps he will put his hands in his pockets, sink low in the chair, and expect you to make a good head and shoulders of him. This is an awkward customer to manage. Possibly the best plan is to recommend him to go to the worst photographer he can find—one of those who advertise themselves loudly as "artists" without knowing the meaning of the word (there are plenty of them in every town)—or to the peripatetic on the sands or common, who will let him have his own way entirely, so that he pays his sixpence in advance.

But, given a decent sitter who, for the present purpose, let us say, wants a head and shoulders, what is called a vignette head, the question is, what to do with him.

A conscientious photographer who desires to do his best, and who charges a price that will allow him to forget the cost of his materials, will in this case take at least three positions—a full, or nearly full face; a three-quarter; and, if the face will bear it, a profile, or nearly profile, showing a little of the off eyebrow; but if the side face would be too trying, then the third negative may be devoted to a variation of expression in one of the other positions.

A simple head requires to be properly composed as much as any other kind of picture, and should not be without variety of line and contrast. If with a full face the body is also turned full towards the camera, a line drawn down the middle of the picture would divide it into two halves, as nearly corresponding as variety-loving nature will allow; but if the body is turned a little away, and the face to the camera, there will be variety of line, suggesting movement and life, especially if the expression can be made to correspond. For a three-quarter face, it is better to turn the figure quite in profile, or even showing a little of the back; or the figure may be full, and the head turned away; either way will give a lively and agreeable turn to the neck. The same remarks will apply to a profile, except that there must not be too much strain in the neck, so as to pitch the head forwards, as already alluded to in the last chapter.

In a "head," the shoulders should be always nearly level, and the figure upright. It looks awkward to see one shoulder much higher than the other, when the rest of the figure is not shown to account for the position. Some sitters are obstinate about this, and will not sit upright, preferring, as they say, to feel at ease and "natural," as if it was their feelings they wanted photographed, instead of their appearance. The only remedy for a bad case of this kind is to make your subject stand. This usually improves the fall of the shadows; it is also a sovereign cure for another difficulty. Some sitters, if you ask them to sit upright, will think they are complying with your wishes if they lean back in the chair and stick their chins in the air, for some people think they are not upright until they are nearly falling backwards. This leaning back in the chair, added to too much twist to the neck, is the cause of nearly all the broken-necked effects. A good deal can be done with a skillful use of the body-rest; but the best remedy, as I have already said, is to make the subject stand.

The eyes should always *go with the head.* Nothing is more disagreeable than to see an eye looking out of the corner, or twisted across the face. The eyes of a full or nearly full face should look full at the camera; a little above the lens I prefer, if you can trust your sitter not to drop the eye as the cap is removed. If the head is turned to the right, the eye should go as much to the right; if a little more it is no great matter, but it should never come back again, or a shy or frightened

look will be given. The second illustration is the same head exactly as the first, as near as I can draw it, with the position of the eyes only altered. The first is constrained and self-conscious, the other easy and natural.

Many sitters who look bright and lively when they talk, sink suddenly into the opposite extreme. As they speak the last word, their head drops, and a sort of reactionary expression comes on; this expression is as much the result of the drop of the head as the alteration in the features, and must be looked out for and counteracted. If a head-rest is used without any support to the back, this result is almost inevitable. Some photographers use a posing chair—sometimes called a vignetting chair—which supports the back; but I prefer to use a back-rest. Indeed, I use this rest constantly, and could not do without it. The use of the rest should be a fine art.

Care should be taken to have the camera a proper height with regard to the head. If it is raised so high that the lens looks down on the sitter, the neck will be shortened, and the shoulders will appear raised. If, on the other hand, the camera is too low, the effect is perhaps still more disagreeable. The face is foreshortened from the chin to the forehead, and the nostrils are unduly visible.

The proportions of the head in a picture should have great consideration. It is too often the practice to make vignette heads much too large for the space they occupy. A carte vignette head should never be larger than $1\frac{1}{8}$ inch from the top of the hair to the chin, and a cabinet should not exceed two inches in the same dimensions.

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[*From "Photographic Mosaics."*]

HOW TO DEVELOP LANDSCAPES UPON DRY PLATES:

A Method of Treating Plates whose Time of Exposure is Unknown.

BY DR. H. W. VOGEL.

In my letter concerning my travels in America, I have spoken of the preference the American photographers show for the pyro developer over the oxalate. I have frequently thought over the matter and asked myself the question: "Now, has this pyro the advantage of the oxalate in developing dry plates?" I will confess that I do use the pyro more since my journey than before. Pyro, indeed, has an advantage in working more rapidly, which is a desideratum to the portraitist, who is anxious to know at once the result of his sitting. Moreover, with the Americans, the old saying, "Time is money," has its full meaning, of which we slow Germans have no idea; but it is doubtful whether, on the other hand, with pyro the same beautiful gradations can be obtained as with oxalate. There is another drawback to its use, which the oxalate does not have, namely, the formation of green fog. True, this green fog may be removed very easily with a solution of iodine (1 to 1000), or 1 gram of iodine, 4 grams of iodide of potassium, and 1,000 c. c. of water, in which the plate is laid until the green veil becomes yellow, then fixed and carefully washed. I have, by using this plan, saved all my plates which were affected with this green pest. But this operation, though easily accomplished, might as well be dispensed with, requiring, as it necessarily does, some expenditure of time, for, with the Americans, "Time is money."

On developing my American plates, I worked upon the supposition that I did not accurately know the times of exposure. I could not definitely say whether a certain plate had been over or under-exposed. I therefore proceeded as follows:

The plates were first of all laid in a solution of 150 c. c. of neutral oxalate of potash (1 to 3) and only 5 c. c. of iron (1 to 3), and the appearance of the image watched for.

If the outlines of the image began to appear in about a minute and a half, the exposure was considered right.

They were then left in the bath, while a second bath was prepared: 150 of oxalate of potassa, 10 of iron. Number 1 was placed in this, whilst a second plate was put in the first bath.

In bath No. 2 the second plate was allowed to develop further.

When it was found that no further detail could be got from the second bath it was put in a third: 150 oxalate of potassa, 20 of iron. This was sufficient generally to develop the plate fully.

Now, as regards the treatment of under-exposed plates:

Two or even three minutes was often not enough to bring out even the high lights in No. 1. They were placed respectively in Nos. 2, 3, and 4, and allowed to finish in the latter.

If the plates came up very rapidly in No. 1, they were immediately transferred to a bath of the same strength, to which from five to ten drops of bromide of potassium were added. The development was in this way retarded, and a plate of sufficient intensity produced.

The baths were always strengthened after three or four plates had been developed therein, or a new bath made.

In this manner the plates were developed slowly and regularly; sometimes a half hour elapsed before a plate left the final developer. They were usually intense enough, and rarely needed any strengthening. Some, however, did need a little doctoring. I remember some of the plates which I had taken in the high plains of Arizona and New Mexico. I had given them an average exposure of seven seconds with the smallest stop, an exposure which had been shown to be correct for some negatives taken upon the Northern Pacific Railroad, but at this elevation the exposure was too long, and the plates, as a matter of course, were over-exposed.

It is, therefore, true, as Bunsen has shown, that the actinic force is greater in high altitudes than upon the sea level, but I had no idea the difference is so great.

Over-developed plates I subjected to the process of reduction with iodine already mentioned. I cannot, however, recommend the cyanide of potassium. The reduction is more under control with the former. The plates are laid in a solution of iodine and iodide of potassium, recommended above for the removal of green fog; they are then put in the fixing hypo, by which the iodide of silver formed is dissolved. If they are not clear enough, repeat the process.

Finally, you will perceive that the negatives give perfectly clear shadows. If they look thin, strengthen them with bi-chloride of mercury and ammonia.

The Atelier photographer may laugh over the amount of pains to save a badly exposed plate, but he forgets that he does not have to travel miles and miles to secure his object. The amount of labor expended upon anything increases its intrinsic value, if not its exchangeability. The portraitist, when he has made a bad negative, need only turn smilingly back to his subject and say, "You have slightly moved; I think I can improve it by another exposure."

And we try, conscientiously, all in our power, to get what we can from our plates.

A skillful amateur, present during my development, was astonished that I should devote so much time. But patience is a virtue of our race.

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THE annual meeting of the Photographic Merchants' Board of Trade will be held at the Metropolitan Hotel, New York City, on February 10th, 1885. A large attendance is expected.

EXPOSITION JOTTINGS.

[FROM OUR NEW ORLEANS CORRESPONDENT.]

THAT the Art Department of the great Exposition is wofully delayed there is no denying. They are only now beginning to hang the pictures in the art gallery, and have barely started in the photographic section.

Mr. Taber, of San Francisco, and Messrs. Jackson, of Denver, are showing some fine views of their picturesque sections, and Mr. Pietz, of Illinois, has a large frame of studio pictures in various sizes.

Many other photographic exhibits are here, but not yet opened and placed, owing to various causes of delay.

The indications are that the industrial art department will not be largely represented.

The Air Brush Company, however, is preparing a fine exhibit with costly and elegant frames, filled with the bright, clear, and crisp products of air brush work. Mrs. Walkup—wife of the inventor—and her assistant, alternate with Mr. E. K. Hough, in showing to admiring visitors the way portraits are made by that wonderful instrument.

Mr. Hough has also his own exhibit, containing air brush portraits of President Richardson, Director-General Burke, Chief of Installation Mullen, and Chief of the Press Department Judson, which are pronounced good likenesses, and creditable examples of the work.

Passing to rear of Music Hall, we find the following exhibits in place: Messrs. McCollin and Messrs. Collins & Sons, of Philadelphia; Messrs. E. & H. T. Anthony & Co., and Mr. W. F. Ashe, of New York; the Blair Tourograph, of Boston; and Mr. S. T. Blessing, of New Orleans. The Blair Tourograph Co. have an extensive show of their well-advertised outfits. Mr. Ashe has several good examples of his well-known backgrounds. Mr. Blessing has a general assortment of photo goods and views of New Orleans.

The well-arranged show of Messrs. E. & H. T. Anthony & Co. has a larger variety of photo goods, and many objects of interest to the general public, including their celebrated lenses, pure chemicals, cheap outfits, rapid printing paper, detective cameras, rapid shutters, and all other requisites for the professiona or amateur photographer.

The writer has heard, among the operators at work in the Exposition, most emphatic commendation of Anthony's Novel Cameras, as the lightest, handiest, and most effective view cameras they have ever used. But, nearly perfect as the "Novel" is, the "Fairy" is admitted to surpass it in desirable qualities, and it is difficult to imagine that any camera can combine lightness, elegance, and strength to a greater degree.

No wonder amateurs increase, for with such apparatus, out of-door photography becomes a delightful recreation, and not a weary labor.

Passing around to the north gallery of Music Hall, we find an extensive exhibit of engravings, chromos, and fancy signs being placed, which we will describe in later jottings.

The Music Hall, main entrance, and all the art exhibits, are lighted by nearly 5,000 Edison electric incandescent lights—the most magnificent exhibit of electric lighting ever made. To see them light up is a sight to be long remembered.

A faint reddish glow starts suddenly and simultaneously in the thousands of burners, and grows more and more brilliant until the vast arch, like a starry sky, glows and flames with radiance from the great chandeliers, like lily clusters bursting into a bloom of light—forms of beauty with souls of fire—and the great hall becomes a scene of magnificent illumination, surpassing Oriental imaginings of Arabian Nights, which came at the magician's call.

Edison is the modern magician who has evoked the best system of light for our modern homes and all interiors. The incandescent light is so soft and pure and easy for the eye, there is no comparison with the dazzling, blinding, ghastly-blue arc lights, and then so steady—no blazing up, then dying away, coming and going in a most tantalizing and uncomfortable fashion, as the arc lights are always doing. Edison's tasteful and artistic exhibit, on so grand a scale, settles, once for all, who shall light our public halls and private dwellings, whatever may be done in streets and squares.

New Orleans, Dec. 27th, 1884.

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THE SAME OLD STORY.

Will photographers never learn to watch their silvering and toning solutions, and see that they are kept at a proper temperature? Whenever there is a cold snap, somebody complains to his dealer that their albumen softens and comes off the paper, and finds fault with the paper.

If the albumen comes off, it is the fault of the photographer, and not of the paper. This remark applies to all brands that we know of.

VIEWS FROM ABROAD.

[*From the "Bulletin de la Societe Francaise de Photographie."*]

H. W. Macdona recommends the following developer for transparencies:

Sodium carbonate	48 parts.
Water	960 "
Potassium bromide	8 "

To each forty-eight parts of this solution, add one part of dry pyrogallic acid. Fix and wash as usual, then immerse in the following clearing bath:

Alum	48 parts.
Citric acid	48 "
Sulphate of iron	144 "
Water	960 "

M. Cheron announced to the French Society of Photography on Dec. 5, 1884, that a bust of Daguerre, half natural size, had been prepared and could be obtained of M. Collard, 39 Boulevard de Strasbourg.

M. Bardy, at the same meeting, and speaking of a standard light, said that the candle could not be accepted as a unit of light, because the composition of candles varied according to the materials used in their manufacture. The acetate of amyl lamp of Siemens appeared to him to recommend itself for this purpose.

[*From the "Bulletin," Association Belge de Photographie.*]

In an introductory article on "Projections," M. A. Rutot gives an entertaining view of the origin and development of the magic lantern, and speaks of the possibilities attainable in its use.

In the same journal (Nov., 1884) will be found some excellent cuts, showing the different surfaces used in photo-mechanical printing processes, and the manner of producing them.

Found in the Editor's Box.

It has often been a source of wonderment how the Dresden albumenizers can prepare their paper so cheaply.

The secret was partially solved by a card we saw recently, representing the work in progress. All the operators appeared to be children about two years old, wearing no clothing.

This, of course, reduces labor to the lowest point.

The children all looked plump and happy.

We understand they soon expect to get eggs from chickens two weeks old, the eggs to be all albumen except the shells.

THE CAMERA IN A BREACH OF PROMISE CASE.

A breach of promise case is now pending at Marysville which exhibits some peculiar features. It seems the defendant, a young man named Augustus Scudberry, is a member of that rapidly increasing class of persons known as amateur instantaneous photograph cranks. This individual had become so enthused over the achievements of European photographers in obtaining negatives of birds flying, horses running away, tigers seizing their prey, &c., that he made himself a holy nuisance prowling around after people with his portable camera, electric slides, and things. One day he would be found ambushed beside the railway track, and filling up the switch-tenders with beer, in the happy anticipation of catching a good impression of a first-class smash-up; the next, he was trying to bribe some dying man's family to allow him to take a snap shot at the patient just when the death-rattle set in. In fact, it is stated that once, when some miners were having a terrific quarrel in a bar-room, Scudberry suddenly appeared in the door-way with his instrument over his head, and exclaimed excitedly:

"Wait until I put in a dry plate before you shoot, gentlemen! Get your pistols ready and fire together when I say three; I want to get in all the flashes."

Well, as we were going to say, this same Scudberry was engaged to a girl named Pliffey, and somehow had got the idea into his head that Amelia—her name was Amelia, and she wore a number four shoe, which is mighty good for a Marysville girl—was untrue to him; in fact, that she was still encouraging the attentions of a dry goods clerk named Boggs.

So Scudberry, having just received an automatic clockwork attachment to his apparatus, carried his machine over to his *fiancee's* house on pretense of taking the pictures of the family. He took Amelia's mother in the act of spanking the baby; he took the baby in the act of swallowing a pin; took the cat in the act of catching a mouse, took dinner, and then took his leave. Scudberry explained that he was to be out of town that evening, and asked that his camera be allowed to stand in the corner of the parlor until his return the next day.

That night Boggs, the alleged rival, called on Amelia, and it is natural to suppose that they were both unaware that the photographic apparatus in the corner—the lens of which was adjusted so as to rake the sofa fore and aft, so to speak—was automatically adjusted to take an instantaneous negative at precisely 11:30 P. M., that being the hour when the jealous Scudberry supposed the festivities would be in progress, if at all. At all events, the couple were startled at about that period by a peculiar click from Scudberry's machine, and which they understood better the next day when that gentleman indignantly broke his engagement and exhibited a picture which he sarcastically labeled "No. 461, Græco-Roman Hugging Match."

Miss Pliffey immediately brought suit for breach of promise, Boggs testifying that he was only rehearsing a contemplated tableau with the plaintiff. Meanwhile Scudberry has filed the photograph as evidence, and the whole town is waiting anxiously for the verdict. As soon as it is rendered the whole story will be carefully dramatized for the Baldwin as one of the most thrilling episodes of life in the Far West.—*San Francisco Post.*

THE name of the college photographer is an enigma. Some call him Pash, others make it Park; the next day Pack, another Parsh. One puzzled individual spellingly inquired for Mr. P-a-c-h. The swell Harvard man talks of Pock; at Princeton we hear of Partch; West Point, with military precision, votes for Patch; while the sweet Vassarite, with the dearest little French accent in the world, affectionately speaks of Monsieur Parr. Wesleyan likes Potch; Dartmouth, Parch; Williams, Parh. It is rumored that the gentleman in question calls himself, with true German accent, *Pach.*—*Ex.*

Views Caught with the Drop Shutter.

SILVER chloride, if cooled to-12° C., is not acted upon by the sun's rays, but immediate decomposition begins on raising the temperature. And from a number of experiments on other chemical substances it is found that light acts only in conjunction with heat, neither being active alone.—D. AMATO (*Gazetta Chimica*).

BY acting on freshly precipitated well-washed silver chloride with bromine water, the chlorine is replaced by bromine. In 24 hours at 11° C. five per cent. is displaced, and ten per cent. in 76 hours at the same temperature. At 44° C. and in 7 hours eleven per cent. of chlorine, and in 12 hours at the same temperature fourteen and a-half per cent. was displaced by bromine.—J. S. HUMPIDGE (*Ber. Deutsche Chem. Gesell.*).

SILVER iodide heated to 146° C. changes its form from hexagonal crystals to those of cubical form. Under the influence of great pressure, this takes place at ordinary temperatures. At 20° C. a pressure of about 394,000 lbs. per square inch is necessary to make this change. —MALLARD and LE CHATELIER (*Compt. Rend.*).

QUICK WORK WITH DRY PLATES.—A friend of ours having occasion to have a number of negatives made for the purpose of illustration, called on Messrs. Baker & Farrand, corner 18th street and 6th avenue. These gentlemen made 22 separate negatives, all very fine, in 8 *minutes*. By the old wet process it would have been a job of several hours.

A MOTION DENIED.—In the suit brought by William Willis and Alfred Clements, trading as Williams & Clements, against Thomas H. McCollin, Judge Butler, of the United States Circuit Court, delivered an oral opinion, denying a motion for a preliminary injunction against the defendant. The contention on the part of the complainants was that the defendant had violated an agreement and infringed and dealt without authority in a patented improvement in photo-chemical printing.

THAT the pupils of the eyes expand to a definite extent under the influence of a constant light, is a principle which Mr. Gorham has satisfied himself to be true; and the outcome is the pupil-photometer, which was recently exhibited at a meeting of the Royal Society. Gorham's instrument is, in fact, a means of measuring the pupil. One merely looks in it, revolves the lid until the two images of the pupil presented to the eye just touch each other, and the diameter of the observer's pupil can be at once read off in hundredths of an inch.—*Photographic News*.

A CORRESPONDENT of the New York *Photographic Times* says that he had some of Vogel's azaline plates sent to him to try, but they would fit none of the American plate-holders or "kits," so a new "kit" had to be made for them before they could be tested. Would it not have been simpler to cut down the plates, some of which were as large as 9½ by 7 inches, to the nearest smaller American size?—*Photographic News*.

INDICATIONS are not lacking that the various photographic reproductive processes will soon practically usurp the province of wood engraving. Steel engraving already is virtually extinct. The wood engraver of the near future must be a master of his art—an artist, in fact—to obtain employment. There will be plenty of portraiture for a Cole and of landscape work for a Kingsley; but the days of a journeyman of the burin are numbered. It is not easy for a thoughtful person familiar with the technical and commercial conditions of book and magazine illustrating to glance at some of the holiday books and come to any other conclusion.—*The Art Amateur*.

PHOTOGRAPHING ON LINEN AND SILK.—There is a feature about photographing on linen that you can *wash and boil* the work and it will not come out. Special interest is shown among society people just now on this subject because of the napkins used at the banquet given to Henry Irving before he left London. His photograph was on each one, and of course it was intended as a souvenir for the guest to take away with him. The silk or cambric is printed from the negative. There promises to be a rage for it, and people will have photographs printed on their curtains and tidies, and in handkerchief corners. The face of a beautiful young lady on the corner of a gentleman's handkerchief would be much more attractive than a monogram or initial letter. It would be just the thing for hat linings and bands. The Detroit *Free Press* suggests that not the least of the advanges of such photographing would be that the wash would be promptly returned if the missing pieces were to haunt the wretched laundress with visions of her customers.

What Our Friends Would Like to Know.

Q.—G. S. C. asks: "If there is any way to clear shadows on Eastman's dry plates, where they are all detail, and no transparency in the shadows?"

A.—Use a weak solution of copper bromide on the plate, then wash and fix again. See "Roche's Manual for Amateurs."

Q.—J. S. says: "Rapid glossy paper received; it works very nicely, only it is yellow, as you will see, perhaps on account of leaving it in water all night without changing. The negative was medium intense, was printed through ground glass at fifteen inches from the lamp; the time was twenty seconds. Will you please tell me what is wrong with it? I would like to use this paper, as I have a great many large pictures to make during the year."

A.—We consider your picture good. You must wash well after developing; then put in the fixing bath for ten or twelve minutes. After washing, if there is any color on the print, flow over it a solution of half an ounce of sulphuric acid in twenty ounces of water, which will take out all discoloration; finally *wash well.*

Q.—T. S. McC. writes: "You will greatly oblige me if you will answer the following questions:

1. Can photographs (positive) be taken on glass, so as to be transparent for coloring?

2. Are they as simple and as easily taken on glass as on paper?

3. Where can I obtain the glass, prepared ready for the camera?

4. Will the photographs be permanent?

5. Could they be as successfully taken on oval glass, or would they have to be taken on square glass and cut oval afterward?

6. Could they be taken on oval concave glass, that is, oval and convex on one side and concave on the other?"

A.—1. Yes, such photographs are very largely used for magic lantern slides. Use transparent colors.

2. Yes; from personal experience we think they are easier to make than first-class negatives.

3. Messrs. E. & H. T. Anthony make and sell large numbers of the plates you need. They are called "transparency dry plates."

4. Such positives, when carefully prepared and thoroughly fixed and washed, are very permanent as photographs; but, when colored, the colors will fade if the slides are exposed to daylight continuously.

5. The plates mentioned above are all made square, and if oval shape is needed they would have to be cut after the pictures are made.

6. All the transparency plates we know of are flat. You could only obtain such plates by getting a plate manufacturer to prepare them for you specially.

Patents.

ENGLISH.

APPLICATIONS.

No. 16,334. Samuel Dunseith McKellen, Manchester. Improvements in photographic cameras. Dec. 12, 1884.

SPECIFICATIONS PUBLISHED.

No. 13,774. John M. D. Worsnop, Bradford, York. An improved method of transferring the film of photographs, or a film of color painted upon photographs, to canvas or other surfaces. Oct. 17, 1884.

No. 912. Robert Galland Mason, Douglas, Isle of Man. An instrument to be called the micro-photoscope. Jan. 8, 1884.

GERMAN.

PATENTS APPLIED FOR.

No. H4,417. Improvement in the application of artificial lighting for photographic sittings. Eugene Himly, Berlin. Sept. 8, 1884.

No. 1,068. Photographic plate-holder. C. Angérer & Goeschl, Vienna. Oct. 9, 1884.

No. 3,290. Process for the production of photographic plates with granular or etched foundation, for direct transfer upon metal, stone, etc. Edward Kunkler, St. Gathen, & Jacques Brunner, Winterthur. Oct. 30, 1884.

PATENTS.

No. 28,779. Process for the production of transparent drawings upon canvas. Ph. H. Mendel, in Astoria, N. Y. March 5, 1884.

No. 29,190. Stretcher for paper and similar material, for the use of photographers. Raboisan, Paris.

No. 29,500. Improvement on patented table for photographers, printers, retouchers, etc. H. Scharft, in Hamburg.

No. 29,109. Photographic changing box, with sleeve. Dr. H. Kayser, Berlin.

PATENTS EXPIRED.

No. 20,739. Improvement in photo. plate-holders.

No. 25,176. Instantaneous shutter, with various times of exposure.

No. 27,996. Process to intensify bromide of silver gelatine negatives in intensely blue coloration.

No. 18,794. Process for the preparation of gelatinized bromo-chloro and iodo-photographic paper, for the purpose of obtaining glossy photographs.

No. 20,599. System of glass painting.

No. 20,740. Vignettes.

No. 20,182. Improvement on printing box for photography, licht pans, and other processes.

JUST ARRIVED.

WE have received by mail, in advance of our usual supply, one copy each of the

British Journal Almanac,

and the

Year Book of Photography.

We have only had time to glance at them before going to press, but that glance has sufficed to show us that we have a feast of good things in store for us in their perusal.

We can also see enough to satisfy us that we will have to telegraph for double our usual stock to supply the demand.

Bibliography.

THE "*St. Louis Photographer*," with a very good group of the Cincinatti convention as a frontispiece, has come to hand.

IN addition to the above, we have to acknowledge the receipt of the following publications, which have arrived since our last issue:

"*Deutscher Photographen Kalender*" for 1885 has come to hand. As a frontispiece we are glad to see a picture of Herr L. Belitski, of Nordhausen, and an interesting account of his life and work occupies some pages of the *Kalender*. The contents of this handy little volume is made up of useful receipts and tables for the photographer; lists of the members and officers of a number of photographic societies in Germany and other countries, together with a very full account of the progress of photography during the year 1884.

THE first number of the *Photographic Times* reached us too late for notice in our last number. In its new shape it reflects credit upon its veteran editor and his *confreres*, as well as upon the gentleman who attends to the commercial part, and to whose good taste we have no doubt may be largely attributed its neat appearance generally.

WE understand the editor of the *Photographic Eye* intends to get out a daily issue; *i. e.*, he expects to put out an *Eye* every day. Now, no gouging, if you please, Mr. Editor.

"*Bulletin, Association Belge de Photographie;*" "*Bulletin de la Societe Francaise de Photographie;*" "*Photographische Notizen;*" "*Photographisches Archiv;*" "*Photographische Correspondenz;*" "*Laboratory Handbook.*"

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ANTHONY'S

Photographic Bulletin.

PUBLISHED SEMI-MONTHLY.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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Vol. XVI. SATURDAY, FEBRUARY 14, 1885. No. 3.

HENRY J. NEWTON.

The gentleman whose picture is presented to our subscribers with this issue was born in February 1823, and is the son of Dr. Jotham Newton, a physician of Pennsylvania. His mother, a bright and gentle lady of ninety-one years, still living and enjoying good health at the home of her son in this city, is a native of Connecticut.

Mr. Newton's father died when his son Henry was less than eighteen months old, and consequently the boy received none of those counsels that only a father can give. Nevertheless, his future life has shown that the influence of the mother has been well bestowed, and still appears in the man.

The early education of the boy Newton was obtained at the Suffield Literary Institute, Suffield, Connecticut, under the guidence of the Rev. Dr. Shaler, who was president, and his two brothers, who were professors in the institute.

At this institution the study of chemistry was prosecuted, with what is today exceptional in such places, practical laboratory instruction; while "Comstock's chemistry" was used as a general textbook. For some reason or other the students of the institute did not take kindly to this study, except young Newton. With him it had a fascination he could not describe; the examinations always appeared easy; and while his classmates hated the task, to him it appeared quite a recreation. Among these fellow-students at Suffield, was John Cleveland, the son of Chauncey F. Cleveland, Governor of Connecticut, and also the latter's son-in-law Burnham, who was afterwards Secretary of State.

Newton, in addition to the practical instruction at school, worked at chemistry at home, and also exercised his natural talent for mechanical manipulations in other directions, believing with boyish assurance that he could make anything any one else could, and really became quite an expert with tools of various kinds.

This mechanical turn of mind apparently directed his attention to manufacturing. For, after a short interval, we find he has left Suffield, and is apprenticed to a manufacturer. This apprenticeship was for four years, but after three of them had been served, Newton was taken in as a partner. This was in Connecticut, and the arrangement lasted seven years.

In the spring of 1849 Newton came to New York City, still engaging in manufacturing. During his leisure from business, he developed his natural taste for art, by reading books on art and art studies, and also by painting in oils. As results of these studies during this period of his life are a number of pictures, still in existence, and which adorn the walls of his house in this city. Although Mr. Newton never took a lesson in painting in his life, except from nature and her works, his pictures exhibit a very great artistic taste in the choice of subjects, are most pleasing in the fine effects of gradation of color, and reveal an amount of execution that we have seldom seen excelled. They are infinitely superior to much of the work forced upon our notice at the present day by those who lack Mr. Newton's modesty, as well as his artistic talent.

This life of business, with few intervals of leisure, continued until the year 1858, when Newton retired from business life, and devoted himself to artistic studies. It was during this period that he turned his attention to photography. While making sketches for paintings he was much annoyed by having to sit in the bright sunlight, and thought that the camera might be called in to do away with the disagreeable part of his art studies. With this idea in view he visited Prof. Charles A. Seeley, who then had a store for photographic materials, on Canal Street, in this city. This was between the years 1860 and 1862.

From Prof. Seeley, he obtained a fourteen by seventeen dry plate outfit. It is not to be wondered at, that Newton immediately turned his attention to paper negatives. With such an outfit the amateur of our day, would grumble from early morn till dewy eve. But Newton manfully took up his load and commenced the study of the science, in which he has achieved triumphs excelled by none in this country ; and to-day he has negatives that are frequently borrowed, to obtain prints, by well-known photographers in this city, because of the exquisite beauty of such negatives. We have never seen anything to excell them and very few indeed that equal them.

The paper negatives prepared about this time are still preserved and in excellent condition ; they were made on paper prepared with paraffine wax.

Between the years 1862 and 1865, and in conjunction with Prof. Seeley, Newton turned his attention to the use of emulsions in photography. Mr. Newton had a method of making bath dry plates that appears to have led to his after experiments with emulsions. This method was the result of his endeavors to overcome the great nuisance of protracted washing of the plates to eliminate free silver nitrate, and also to counteract their unreliability. His method of proceeding was : Dip the collodion-coated plate into the silver bath to sensitize, then dip into a bath of clean water, then into three dishes of clean water successively, and lastly into a bath containing four grains of pure ammonium chloride to the ounce of water. In working a number of plates, one was in each stage of the treatment, and although there was a number of stages, yet the time for each was short.

The use of colodio-chloride emulsion in Europe probably suggested the use of bromo-iodide emulsion. Mr. M. Carey Lea did many experiments and published more about emulsions than any one else at this time. Much was done to make a permanent emulsion (*i. e.*, one that would keep). The method then had been to use an excess of silver nitrate, in order to insure sensitiveness upon the plate. But this produced a tendency to fog after the emulsion had been made twelve hours ; so that the plates had to be flowed within twelve hours and then thoroughly washed to insure success.

All efforts to compound a bromide emulsion with excess of silver nitrate and make it permanent had failed, until Newton made the experiment of neutralizing the excess of silver nitrate by adding a chloride. As above stated, this appears to have been suggested by his experiments upon bath dry plates.

He experimented with every conceivable chloride in his emulsions, and finally settled down upon cobalt chloride as the most reliable and best. The chloride was added in such quantity that it neutralized the excess of silver nitrate and was itself slightly in excess. Mr. Newton claims that the secondary products of the reaction (*i. e.*, cobalt nitrate, etc.) have no effect upon the sensitiveness of the plates, and that better effects are obtained by this method than by washing.

In his first experiment he added the chloride to the emulsion after it had been made twelve hours; flowed a plate and exposed. On developing he failed to obtain a picture, and the plate was covered with fog. He tried the same emulsion the next day, and thought he could detect a trace of an image, but still most of it was fog. In daily trials the emulsion seemed to improve, less and less fog appearing, until the fifth day, when more chloride was added, and a good negative was finally obtained.

Mr. Newton also tried bromide instead of chloride, but this made the plates less sensitive (See BULLETIN, Vol. VI., p. 181). These interesting and valuable researches we noted abroad as well as here. In the *British Journal of Photography* for 1875, p. 268, is found some very favorable comments upon Mr. Newton's work. Speaking of the action of the chlorides, the writer says: "This is, we believe, the first time that the fact has been noticed;" and finally: "Indeed, we would commend the whole of Mr. Newton's article to the careful attention of our readers." This article was published in the BULLETIN for June, 1875, and occupies over five pages.

IN Mr. Newton's laboratory and studio we found some two hundred bottles containing various emulsions with which he has experimented, all labeled with some characteristic comment, showing the care with which his work has been done, and the patient labor of a man with love for his art. Such methodical work might well be set up as a model for some of our modern workers.

It is interesting to note that Mr. Newton used the soda and pyro developer on his collodion dry plates, as he found that potash was too corrosive.

We have already remarked upon the fine negatives in Mr. Newton's collection. These include quite a number of instantaneous views, and also a number upon paraffined paper. Amongst these negatives are some of views upon the upper part of New York Island, now covered with dwellings. Quite a number of the finest are from places in Central Park, and the beauty of the detail is most wonderful. Amongst others, we have the University Building, Washington Square; the Academy of Design, Twenty-third Street; and Old Columbia College, Forty-ninth Street.

Of instantaneous views we noted quite a number in and around New York harbor. One of the old steamer "Continental" is particularly good. Some of the cloud effects of these last negatives are very fine, and we have never seen them surpassed by gelatine plates.

Mr. Newton also experimented upon the ferrous oxalate developer which was brought from England by Mr. Willis. The latter told Mr. Newton that the method had been written out and placed with the *British Journal of Photography*, not to be published until Willis gave instruction. The process was crude, and the formula was given to Mr. Newton to work out. As originally given, it consisted in adding ferrous oxalate to a solution of potassium oxalate until the latter was a deep orange color; it was then acidified with citric or oxalic acids.

Newton found that potassium oxalate was too expensive, as it then cost $2.50 a pound; and he made the salt by adding crystals of oxalic acid to a solution of salts of tartar. Ferrous oxalate also had to be specially prepared for photographic work, it not yet being an article of commerce. These were found to be very troublesome procedures, and Newton experimented until he arrived at a method very nearly like the one so generally used to-day to make this developer. The only exception to the modern method is that Mr. Newton added solid powdered protosulphate of iron instead of a saturated solution as now used; his idea in this was to prevent dilution.

Mr. Newton in 1879–1880, exhibited twenty-eight instantaneous views at the American Institute Fair, all made upon his colodio-emulsion plates. None of these emulsions were less than a year old, and several of them were four or five.

About fifteen years ago, Mr. Newton succeeded Prof. Charles Joy, of Columbia College, as President of the Photographic Section of the American Institute, which honored position he still retains.

Mr. Newton is a lover of the photographic art and a tireless and enthusiastic worker for its advancement. We honor him for his past work and the promise of much more in the future.

ALL communications for the columns of the BULLETIN should reach us on Monday preceding the date of issue to insure their publication at that time.

PHOTOGRAPHY.

A HISTORY OF ITS ORIGIN AND PROGRESS.

BY C. F. CHANDLER, PH.D.

(*Continued.*)

As early as 1835 Dr. John W. Draper, of the University of New York, used sensitive paper in experimenting on light, resorting to bromide of silver and other compounds more sensitive to light than any previously used. When the processes of Daguerre and Talbot were published, Dr. Draper saw at once the importance of using larger and better lenses, with large aperture and short focus. He soon succeeded in making daguerreotypes of the human face—soon after Sir David Brewster's assertion that such a thing was impracticable. The first face was taken with a lens 4 inches in diameter, with a focal length of 14 inches. The sitter's face was floured, he was placed in the sunlight, and the plate was placed in the violet or chemical focus of the non-achromatic lens. He often took his own picture, arranging everything in the camera, leisurely seating himself, and at the end of the long sitting rising to develop and fix the picture. He then used a skylight, consisting of a large tank filled with ammonio-sulphate of copper, to illuminate the sitters, which enabled them to open their eyes. A most important improvement was the application of vapor of bromine from bromide of lime, which wonderfully increased the sensitiveness of the iodized plates, and thus brought the period of exposure in the camera within practical limits. They became so sensitive as to receive an impression instantaneously in the open air, and in the light of an ordinary apartment in a few seconds. According to Dr. Draper, this was first suggested by Dr. Goddard, of Philadelphia. Vogel attributes it to Fizeau, Claudet, and Gaudin. Dr. Roth gives

Bingham the credit of introducing bromide of lime in 1845.

About the same time, and before Dr. Goddard's method of "accelerating" was made public, a similar improvement was discovered by Dr. F. A. P. Barnard, by the use of chlorine. Dr. Draper taught his improved process to Prof. Morse, who long successfully practiced it, and who possessed exclusively the secret until it was published by Dr. Draper in the *London and Edinburgh Phil. Mag.* Dr. Draper took daguerreotypes of the moon as early as 1840, when the moon's rays were supposed to possess no actinic power.

In 1841 Petzval introduced the double objective, which admits an extraordinary amount of light and secures very correct outlines. Another important improvement was the use of gold in fixing the picture, suggested in 1842 by Fizeau, by which it is made sharper and stronger.

The Daguerreotype process soon came into general use, and was chiefly employed for portraiture, creating a new art and a new profession. The Talbotype process, being much more troublesome to execute, and yielding results less satisfactory, received little attention.

Herschel experimented with glass plates coated with iodide, bromide and chloride of silver for negatives as early as 1840, but Nièpce de St. Victor first succeeded in using them, employing a film of iodide of starch, which he sensitized in nitrate of silver. He subsequently used iodized albumen films (1847).

The next important step in the art of heliography was the introduction by Scott Archer, in 1851, of collodion as a means of producing a sensitive film on glass or other suitable surface. Gun cotton was discovered by Schönbein in 1846; and its solubility in a mixture of alcohol and ether was announced by Fl. Domonte and Ménard in 1847, and perhaps simultaneously by Maynard and Bigelow.

"Archer substituted a transparent film of iodized collodion spread upon glass for the iodized paper used in Talbot's process, to receive the negative image in the camera. The process is thus rendered much more certain and rapid, and the positive pictures obtained by transferring the negative by printing on paper are found to be much sharper in outline than when the transference occurs through paper, as in the Talbotype process. In this process, as in that of the Calotype, the image produced in the camera is a latent one, and requires development with substances such as pyrogallic acid, or protosulphate of iron." The reducing agent, or developer, precipitates metallic silver from the nitrate with which the plate is met, and this metallic silver adheres to those portions of the film where the light has acted upon the iodide and bromide, thus developing the latent or invisble image.

This process was, till recently, the one most generally employed by photographers for producing negatives, and for positive prints on glass. When the negative on glass is coated with black varnish, or when the negative is taken on a black surface, it becomes practically a positive, as the silver, while black by transmitted light, is white by reflected light; such pictures are known as *ambrotypes* (on varnished glass), *ferrotypes* (on varnished sheet iron), etc.

(*To be Continued.*)

◆

We take pleasure in announcing that we shall illustrate an early issue of the Bulletin with a portrait of Mr. F. C. Beach, the *President of the Society of Amateur Photographers of New York.*

DAGUERRE.

BY L. H. LAUDY, PH. D.

School of Mines, Columbia College.

THE question might be asked why the subject of Daguerre is offered to the readers of the BULLETIN. I know not how to introduce a reason in a better way than by offering a purpose, the design and character of which is from an historical point of view: to keep in our minds those men of genius who have consecrated time, patience and energy, in placing in our hands one of the most wonderful of all discoveries.

The search for historical facts is an agreeable literary and scientific ramble through endless volumes, which not only rewards the explorer, but benefits those who cannot devote time in this direction. Our eyes must be out of focus if the distant laborious ingenuities of remote ages are more distinct in the field of vision than the wonderful works of the present. A photograph is a more startling fact than a pyramid or a sculptured cavern.

I propose to make a preliminary survey of the daguerreotype and then devote some space to abstracts from leading scientific journals bearing on the subject; thereby enabling the reader to form a judgment from the sum of the facts instead of an estimate included in the whole subject of photography.

It has been said that no nation has had exclusive concern in the production of any class of inventions, for they are made simultaneously in different parts of the world by persons working independently of each other.

Niepcé and Daguerre had been seeking the same end by different means, each totally ignorant of the work of the other. And just as Daguerre was about to publish his discovery to the world, an Englishman named Fox Talbot hit upon another process, not as perfect at the time, but one that laid the foundation of all photographic reproductions and the subsequent success of the art.

Niepcé directed his attention to certain asphalts, and by exposing them for a long time in the camera, it was found that part of the asphalt was rendered insoluble in oil of lavender by strong sunlight, while the shaded portions retained their solubility. By washing with oil of lavender, the unchanged asphalt was removed and the metallic surface etched for printing.

Soon after this, in the year 1839, Daguerre announced to the members of the French Academy his wonderful discovery of retaining the reflected image, and published his process to the world. His fame is immortal, although we know very little about him, outside of his being one of the many who have consecrated their time and talents to the advancement of science.

Daguerre's process was first made known on August 19th, 1839, to three members of the French Academy, Humboldt, Biot, and Arago.* Twenty-five days later the news of Daguerre's discovery reached America, and when it arrived it was looked upon as a hoax, the public having been treated to a fabulous story about the moon in the New York *Sun* of August or September, 1835.

But there was one investigator in New York City who had faith in the announcement. He had been experimenting upon the use of silver salts as a means of measuring the intensity of light. This was Dr. John W. Draper, of University College. He at once received the intelligence in good faith and began to experiment with it. Having gained important facts from his experiments on light, he set to work to repeat Daguerre's experiments, and, as history shows, was the pioneer in this country. America, usually first in all important inventions, lays no claim to having made the first sun pictures ; but it takes pride in claiming the first portrait. The first daguerreotypes of the human face were taken by Dr. John W. Draper, soon after the announcement of Daguerre's discovery. This was at a time when such a thing had been pronounced impracticable by so high an authority as Sir David Brewster. A daguerreotype of the moon was also taken by Dr. Draper as early as 1840, at a time when the moon's rays were supposed to have no actinic power ; and in fact when bright objects strongly illuminated by the intensest light of the full moon, failed after hours of exposure, to produce any trace of an impression on the plates prepared by Daguerre.The daguerreotype taken by Dr.Draper showed very well the light and shade of the different regions of the earth's satallite. An announcement of these facts were made in the *London and Edinburgh Magazine* in March, 1840, and a full account was afterward published in the same journal. The first exterior taken by Dr. Draper was the "Church of the Messiah," from his laboratory window at the University.

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*Comp. Rend. Tome IX., Aout 19, 1839. Poggendorff Annalem der Phys. u. Ch. 1839, CXXIV., p. 193.

Sir David Brewster, after saying it was impracticable, was obliged to announce that "Dr. Draper was the first who, under the briliant summer sun of New York, took a daguerreotope portrait.*

This idea of portraits had not been regarded as a possible application of the Daguerreotype process, for no notice is taken of it in reports to the French legislative bodies.

When we consider that twenty to thirty minutes was then required to get a landscape, it is not to be wondered at that taking portraits was unthought of. And it would have remained so, had not several investigators suggested the accelerating of the iodide surface to reduce the time of exposure. Among the earliest workers in this direction was Dr. F. A. P. Barnard, the President of Columbia College, at that time at Tuscaloosa, Alabama, and whose report to the *American Journal of Science and Art* I here give.*

Improvement in the Daguerreotype process of Photography ; by F. A. P. Barnard, Prof. of Math. and Nat. Phil. in the Univ. of Alabama.

Messrs. Editors.—I commenced, about a year since, in connection with Dr. Wm. H. Harrington of this place, a series of experiments in photography, according to the methods of Mr. Fox Talbot and M. Daguerre. Our attention was directed principally to the Daguerreotype process. From the analogies known to exist between iodine and chlorine, we were strongly impressed with the belief that the latter substance might in some manner be employed to render the surface of silver more sensitive to the action of light than it had yet been made. To determine the correctness of this opinion we instituted a variety of experiments, which, as they proved for the most part unsuccessful, it is unnecessary to detail. The coating formed by the direct action of chlorine gas upon polished silver was not found to possess the desired photogenic properties. We were led, therefore, to seek whether by the decomposition of some compound of the metal, a sensitive chloride could not be produced. Mr. Talbot had already done this in the preparation of his photogenic paper ; but as it was our desire to avail ourselves of the beautiful lights formed by the vapor of mercury, and as the prepared paper, at least so far as our experiments go, is not susceptible of receiving them, we endeavored to produce the decomposition upon the surface of the solid metal. It occurred to us as a possibility that the iodine formed in the usual manner, by exposing a plate over the vapor of iodine, might perhaps give up its silver to chlorine, and thus produce the desired coating. . This impression was not verified in our first experiments, owing to a cause which will presently be noticed. Perseverance, however, at length brought its reward. By varying in every possible manner, the circumstances of the experiment, we succeeded in producing a surface so exquisitely sensitive to the action of

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*Edinburgh *Review*, January, 1841.

**American Journal of Science and Art*, Vol. XLI., p. 352.

light, that the image of an illuminated object was formed upon it in the camera in a space of time almost inappreciable.

The following is the process by which this result is obtained. Let the plate be prepared in every respect as if an impression were to be taken according to the method of M. Daguerre. Let it be then exposed for the space of half a minute to the action of chlorine gas, diluted with common air to such a degree that it may be inhaled without any particularly unpleasant sensation. It will then be found so extremely sensitive, that on being placed in a camera, with an aperture such as is commonly employed in taking miniature portraits, an impression will be produced upon it in the smallest time in which it is possible to remove and replace the screen. The completion of the picture over mercury is effected in the usual way.

A plate thus chlorized, on exposure to light, almost immediately assumes a very deep violet color, nearly approaching black. The mercury is not directly tarnished, and in this state the picture is even more beautiful than after being washed with the hyposulphite of soda. But without this washing it cannot be preserved.

M. Daguerre has announced that he is able to take images of objects in an instant of time. I have not seen any statement of his method. Some of the artists in the Atlantic cities have been equally successful. Their process is not that which I have here described. I suppose that I am acquainted with the mode of preparation which they employ ; but as it was communicated to me under an injunction of secrecy, before I had discovered it myself, although I had actually employed it unskilfully, and therefore without complete success before, I can say nothing of it here. It will, without doubt, soon be made public, if it is not already known. I believe, at any rate, that the chloride coating is more sensitive than any other which has yet been used.

This discovery has opened a new field for experiment, in which we are now actively engaged. The results may be communicated hereafter.

It appears to us that the lights produced by this process of preparation are much finer and smoother than those of the original process of M. Daguerre. Some idea of the quickness of the camera operation may be formed from the statement of the fact, that a man walking may be represented with his foot lifted as about to take a step.

The quantity of chlorine necessary to produce the effect is exceedingly minute. In our early experiments we employed a quart bottle of the gas, opening it in a deep box, and leaving out the stopper while deliberately counting twenty. Replacing then the stopper, the plate was laid for half a minute over an open- in the top. After fifty experiments the gas in the bottle seemed not to have lost any of its original intensity or color. We have better arrangements at present in preparation.

Much care is necessary to avoid an excess of chlorine. The principal cause of our early failures arose from an error of this kind. One may easily determine, with any apparatus, the time and quantity necessary, by laying a plate over the aperture and drawing it partly off at intervals. The action of the gas will then be greatest, of course, upon the part longest exposed. Too much care cannot be taken to exclude the light during the process of preparation.

Tuscaloosa, July 1, 1841.

(To be continued.)

* * *

IMPURE CHEMICALS.

THE following occurrence will illustrate not only the annoyance, but also the needless waste of time and material, that arises from easily remedied causes: impurity of photographic chemicals. During the last summer, a gentleman well versed in photographic operations, found himself without any oxalate of potash. As he was at a well-known summer resort and time would not allow him to send to New York for a further supply, he consulted an apothecary, himself something of a photographer in the days of the collodion process. Of the oxalate of potash obtained, nothing was remarked of note beyond the fact that it appeared to be unusually soluble, and reacted, with litmus, uncommonly acid. The solutions being made up, an attempt was made to develop a plate, but made in vain. The iron and bromide solutions were from chemicals obtained at an old and most reliable house, the oxalate was suspected, and justly so. It appeared probable, from the solubility and acidity, that free oxalic acid was present. The next step was to get rid of the excess of oxalic acid by saturating it with caustic potash in solution, thus making oxalate of potash of it. A second journey to the apothecary resulted in the purchase of some caustic potash and the *ex tempore* manufacture of oxalate of potash began. So much potash was necessarily used to produce saturation that it was suggested that the supposed oxalate of potash, purchased in the first instance, was merely oxalic acid. This, however, was strenuously denied by the apothecary. Suffice it to say, the developer now produced worked in an every way satisfactory manner.

The gentleman to whom this accident happened was justly indignant, and much the more so from an after circumstance. A few days later, the writer, with his friend, met the apothecary, and during a conversation on the ease with which such an impurity as oxalic acid could be detected, the annoyance caused in this case was pointed out. The writer expressed much astonishment that an apothecary, he himself knowing something of photography, would allow such an article to be used, but he was taken entirely by surprise when the excuse given was, " We buy where we can buy cheapest." "But, do you never test your drugs and chemicals to ascertain if they are as represented?" "We take the dealers' word for that." The open statement of the apothecary, disgraceful as it is, undoubtedly expresses a somewhat prevalent state of affairs. Some years ago the writer carried out a long series of experiments upon the purity of drugs, and much to his surprise he frequently found specimens in which no particle of the substance they were supposed to contain could be found by any chemical or physiological tests.

To sell such chemicals may be business, but it is not honest. The loss of the mere cost of the chemicals is nothing compared with the loss of time, ruin of other chemicals, and even the loss of a plate that can never be reproduced.

Fortunately the remedy is an easy one, but it is not to be found in committees for testing chemicals for any society, chemical or other; it is not to be found following the advice contained in blatant advertisements of underselling dealers. The remedy is simple: purchase your chemicals from reliable firms, whose reputation for integrity in business and care in selection and manufacture of their goods has penetrated wherever the art-science of photography is known. Good chemicals cost more than trash; chemicals put up securely, and to avoid deterioration and contamination, cost more than those sold in paper parcels; but the increased satisfaction, the avoidance of failures, and the fact that first-class work can not be obtained without good chemicals, will a thousand-fold repay the slight additional cost.

The remedy is a simple one, and if adopted, those dealers whose moral sense is only reached through their cash books, will at least be taught that financial success can only be attained through honesty.

THE BUFFALO CONVENTION.

To the Photographers of America:

It is scarcely five months since the Photographers' Association of America held their fifth annual convention at Cincinnati, and we have now commenced to arrange for what will be the model convention in the life of the Association. The Executive Committee have had a meeting at Buffalo, and were in session for three days, accomplishing considerable work, making several important changes in its management.

The beautiful City of Buffalo, with all the advantages it possesses, should entitle it to be called the Convention City. We have secured its immense Music Hall for the display of photographs, apparatus and accessories; the stock dealers have expressed themselves that their department will excel all former efforts; the light for the exhibition will be perfect. We have also secured, for business meetings and demonstrations, the Concert Hall, in the same building, considered one of the finest in the country for its acoustic qualities. Our energetic local secretary has his plans all made, and the photographic fraternity can confidently look forward to an instructive exhibition, that will outstrip its predecessors. Many papers of practical value will be read, besides demonstrations given of all that is new in our rapidly advancing art.

One of the features of our convention will be an excursion to the famous Niagara Falls, and those who wish to linger until evening at this world's wonder will have an opportunity to see it illuminated by electric light, a sight that will never be forgotten. It is the duty of every photographer to attend this convention, and, moreover, it is necessary for each member to make an exhibit of his best efforts; there will be plenty of room for all, and I would most earnestly urge you to show the world that we are progressing. The public generally are not fully aware of the magnitude of our industry, and we must *impress* them; let our art be shown in all its branches and indicate our individuality; there is an unlimited field from which we can gather; let us show our good taste in the selection of subjects.

I would suggest that we illustrate a thought, sentiment or story. Genre pictures are always full of interest; let our aim be for high art; send us artistic portraits, beautiful landscapes and skillful architectural photographs. The chemical and scientific part of our profession is making rapid strides, but we do not want it to outrun the *artistic.*

Fraternally,

J. LANDY,

President of the Photographic Association of America.

THE CONVENTION AND ITS CRITICS.

To the Editor of the BULLETIN:

I HAVE just read an article in one of the new photographic Journals under the heading of "Convention Programme," and am much pleased with the spirit animating it.

It shows to the photographic fraternity, and especially to those having in charge the affairs of the P. A. of A. that there is one man, at least, who is entirely capable of appreciating the needs of the Society and who manifests a willingness to "show up" the mistakes and weaknesses in its previous management, and also to volunteer, free of charge, such wholesome advice as shall prevent in the future any such "fiascos" as that at Cincinnati.

What an immense boon, to be sure!

I fear the fraternity will never appreciate it.

Now, if the writer of that article would only assume entire charge of the coming Buffalo Convention, and dictate to the unfortunate officers just how they should manage the affair in order to make it a grand success, and escape the severe lashings he has been compelled to administer to all former officials, his generosity would be unbounded and unparalleled.

The office of Dictator-general could be created in which his magnificent capabilities could be exhibited to the admiring photographic universe.

By the way, what a benighted set of

Photographers were in attendance at the Cincinnati Convention!

The poor simpletons didn't even know that the thing was a "fiasco," and nine-tenths of them would have remained in blissful ignorance of the fact until this day but for the enlightening vouchsafed from London.

Of course it is inconsistent with reason that the judgment of the mass should be conclusive as against the decision of two superior minds who unanimously concur in their opinion that the late affair, and all previous ones as to that, were miserable and unmitigated failures.

Let us hope that those having the management of the Association, profiting by the mistakes of the past and the counsel of the journal whose editor evidently takes such a deep interest in the society's welfare, will avoid the pitfalls of their predecessors and build so grand a structure at Buffalo that even the chronic grumblers will find their occupation gone.

The journal alluded to has kindly furnished the Executive Committee with a programme of subjects which they should have discussed at the coming meetings.

The list is very complete, but if I might be allowed, in my humble capacity, I would suggest that there are a few topics connected with "our beautiful art" that the editor failed to enumerate.

It is not likely the benches would all have left the hall during the rendering of his programme, and no doubt they could be induced to remain while other subjects were discussed.

Of course such an audience might seem a little *wooden*, but in all large assemblages there are some of that sort. They would at least be inperturbable, and, as the colored brother might remark, "not de seat-full" listeners, and would manifest no uneasiness to get out and learn something of what live photographers are doing.

Papers on such subjects as the following would possess an interest that would doubtless keep the audience spellbound:

What is the best method to head off the upward tendency in prices, and prevent unscrupulous photographers victimizing the unsuspecting public?

In case any of the more upright members of our craft desire to come down from the prevailing high prices, and at the same time reduce correspondingly the quality of their pictures, is there any method by which cheaper and poorer work can be produced?

Is it best to make full-length or bust pictures? (This, of course, will not apply to landscape photography).

Is it desirable to use a carpet and upholstered furniture with out-door scenery for full dress?

How to manage the sitter who had "rather have a tooth pulled." Ditto, those "who break the machine" and find their proofs "horrid."

Is there any better way of elevating photography in the estimation of the public than by making "first-class" work at $2.00 per dozen, and "slinging" in colored panel worth five dollars?

Which is the best photographic publication now extant, and why is it better than the *Bulletin*, the *Philadelphia Photographer*, *The Eye*, or the *St. Louis?*

By adding these to the list of subjects already enumerated, it would furnish a fine assortment, and render it impossible that the exhibition at Buffalo should be other than a magnificent success.

True, there might be a few thousand in attendance who would care so little about what was said upon these topics that it would be found necessary to institute some stringent measures to compel attendance at the meetings. It might even be said by some that these subjects were better discussed in such able and interesting journals as—well—where they could be perused and considered at leisure instead of occupying the valuable time of the Association.

I notice that the Executive Committee at their recent meeting in Buffalo discussed the propriety of closing the exhibition during the morning session.

If that course should be decided on, they would be obliged to devise some very vigorous means of clearing the hall. It would doubtless require a larger force of police than Buffalo could spare to accomplish it.

Locking the crowd *in* wouldn't compel their attendance, and it is doubtful if even locking them *out* would, as photographers like most other people prefer to do as they please and are not easily driven.

It is pleasant to note the journal alluded to proposes to give the Association its support. I have a distinct recollection of a "brooding hush" like a graveyard stillness that pervaded its pages previous to the last convention.

The Association cannot afford to lose its valuable assistance, and it can less afford to incur its displeasure or merit its criticism; but seriously, I trust the Executive Committee will not hamper itself, by adopting the plan proposed in that journal of having Thomas, Richard, and the other distinguished gentlemen prepare papers and addresses to be delivered to empty seats, which, as all experience has shown, would be the case.

If the forthcoming convention and exhibition at Buffalo equals that at Cincinnati the new officers of the Association may well feel proud of their success.

I hope it may be so.

J. H. KENT.

ROCHESTER, N. Y., Feb. 2, 1885.

A CLOUD OF WITNESSES.

WE give below some of the kind and encouraging letters we have received from friends and subscribers to the BULLETIN. We are glad to receive these cheering words from our friends, and we shall do our best to retain their good wishes, and merit yet others in the future;

Messrs. E. & H. T. ANTHONY & Co.,
Publishers of the BULLETIN:

GENTLEMEN,—I cannot forbear writing to express my pleasure at seeing my old and well-tried friend the BULLETIN, in its new and beautiful dress; and my still greater pleasure in the announcement that we may look for it twice every month. It cannot come too often, for it always brings some useful hint, some valuable information, or some word of good cheer to us poor photographers struggling against constantly increasing expenses and constantly decreasing profits.

We all looked upon Mr. H. T. Anthony as our friend, for he was always devising some novel method, some wise economy, or some better process for us, with a remedy to suggest for every difficulty.

He was wise, patient and kind. We naturally look with eager interest to see upon whom his mantle shall fall, and we are pleased to know it is Prof. Chandler, of Columbia College. For by his personal friendship with Mr. Anthony, his intimate acquaintance with the subject, and his active and highly cultivated intellect, he is, we believe, fully qualified to take up worthily the line of labor and duty Mr. Anthony has so nobly brought up through the years to the close of his long and useful life.

That the BULLETIN may increase in power and prosperity, is the wish of "an old subscriber." Yours faithfully,

E. K. HOUGH, New Orleans.

"The external and internal appearance of the BULLETIN are something to be proud of, and the new departure shows that, while it is too young to stop growing, it is quite old enough to be staid and sensible and interesting. It is a credit to you and Prof. Chandler, and to the fraternity at large, and I wish you all the success your enterprise deserves."

Very truly yours,
J. H. KENT,
Rochester, N. Y.

E. & H. T. ANTHONY & CO.,

GENTLEMEN,—We congratulate you heartily on the improvements in the BULLETIN.

The ability shown in its make-up, and its general attractive appearance, is additional evidence of the ability of the house of Anthony to keep well ahead of the times.

Yours cordially,
GEO. EASTMAN,
Treasurer Eastman Dry Plate & Film Co.

E. & H. T. ANTHONY & CO.,
New York:

GENTLEMEN,—In acknowledging the receipt of the first number of the new volume of the BULLETIN, the pioneer number of your new departure, we desire to extend our congratulations for the success you have achieved in giving to your magazine such an attractive dress in harmony with its contents, and befitting a publication that has to do with pictures and picture making.

Wishing you, gentlemen, all the success your zeal and enterprise merit, we are

Very truly yours,
A. M. COLLINS, SON & CO.

E. & H. T. ANTHONY & CO.,
591 Broadway, N. Y.

DEAR SIRS,—Permit me to say a word in regard to your new enterprise THE BULLETIN, in its beautiful new dress, and crammed full of good, interesting matter for every amateur as well as old photographer. I shall try and see if its circulation may be increased in our city this year. It would do you good to see with what eagerness the parties peruse it that I have shown it to and exclaim: "That certainly is just the book I want." Well I shall try and see that they get it.

Yours respectfully,
E. R. HAIGHT.
Washington.

COOTICOOK, Canada.

MESSRS. E. & H. T. ANTHONY & CO.

DEAR SIRS,—Having just received the first number of this year's issue, in its daisy of a new dress, something prompted me to pull out a two-dollar bill and lay it into that cover, to prevent forgetfulness. And that something must have been either the new dress or the undergarments, can't say which—*perhaps both.* * *

Yours truly,
W. D. KILBURN.

MESSRS. E. & H. T. ANTHONY & CO.

DEAR SIRS,—The first number of the BULLETIN received yesterday. The new "dress" is certainly an improvement on the old one. As to the contents—well, I wouldn't subscribe for it did I not find it interesting and instructive.

Yours truly,
EDW. G. HARRIS.
Florida.

EDITORS ANTHONY'S BULLETIN, NEW YORK CITY.

DEAR SIRS,—I have received the BULLETIN. To say that I have enjoyed it is to express myself with much moderation.

The BULLETIN has my heartiest thanks for many things.

Very truly yours,
GEO. W. NEWCOMER.
Texas.

EDITOR ANTHONY'S BULLETIN:

DEAR SIR,—You have my best wishes, and the last two or three numbers show that you have started with renewed vigor, and that you will merit the highest place in photographic journalism.

Yours truly,
JOHN H. THURSTON.
Secretary Boston Society of Amateur Photographers.

I wish you could know how much one amateur, at least, appreciates your kind and cordial offer to answer questions. Wishing the best of success and long life to the BULLETIN.

Yours sincerely,
N. E. MAXSON.

Your journal is so well worth all you ask for it, that I feel almost ashamed to take advantage of your liberal offer. But we must needs get all we can that will help us to grow, and many of us find photography more fascinating than profitable. I like your new cover very much, and shall gladly welcome it, as well as the goodly contents it contains. I thank you that we are to have it every fortnight, and congratulate you on the success it has so well merited, which gives you courage to give us so much more help.

Very truly yours,
TH. E. M. WHITE.

January 19th, 1885.

E. & H. T. ANTHONY & CO.:

GENTLEMEN,—Enclosed find $2.00, for one year's subscription to your ever welcome and greatly appreciated BULLETIN.

GEO. F. BLACKBURN.

YOUR BULLETIN, Messrs. Anthony & Co. looks good, *very* nice—get it just right, especially semi-monthly. Don't alter it any more, it was once a circular, now its square, don't make it three-cornered, and, above all, don't make it a newspaper; that spoils it for binding.

Every photographer needs a library of old journals to interview occasionally. Don't think that old processes, old formulæ, old hints, old struggles, and old successes are of no use—it's a great mistake. I say to your readers, keep all your journals, and read them once a year; some of them may contain germs of future triumphs for photography.

For economy I take an old volume, straighten its back, screw it in a vise between boards, drill with an awl four or five holes, a quarter of an inch from the back, and sew a strong thin cord through and through, tie well, take it to a printer and have the edges cut. I have then a complete volume, paged and indexed, and also with blank leaves inserted for memoranda. It is no trouble, and if you are not troubled with enough ingenuity to do it yourself, take it to any blacksmith, who will do it for you in ten minutes, Greenwich time.

Very truly,
WM. L. GILL,
Lancaster, Pa.

You have my best wishes. The last two or three numbers show that you have started with renewed vigor, and that you will merit the highest place in photographic journalism.

Yours truly,
JOHN H. THURSTON,
Sec. Boston Society Amateur Photographers.

NEWS ROUND ABOUT.

GELATINE FILMS.

IN a communication received from Mr. Eastman, who is preparing machinery to make this paper on a large scale, it was stated that many of the defects incident to coating gelatine emulsion on glass would be avoided. A very uniform coating was promised, and the process of taking the film off the paper was said to be very easy and simple.

A machine has been made which will coat a strip of paper two and a half feet wide by 3,600 feet long; and in an improved roller-holder, which is being manufactured, enough sensitive paper can be stowed to make fifty negatives, whose total weight will be one pound less than two of our lightest double wood plate-holders loaded with plates. The paper is first coated with a soft gelatine, dried, rolled and calendered, so as to be very smooth and hard. Next it is coated with an insoluble sensitive gelatine emulsion. After exposure, development and fixing, the film side while damp is laid upon a sheet of glass, and the whole plunged for a minute into hot water. The paper is then pulled off and the film, when dry, is next pulled off the glass. The film shown was very tough and would bear rough handling. It is held by some that the amateur will not care to go to so much bother; this may be true; still if a uniform article can be manufactured, it will tend to materially lessen the labor and annoyance of carrying around a lot of fragile glass.—*Photographic News.*

THE BULLETIN, of course, has known all about this for many months, but was requested to say nothing until the films were nearly ready for market. Mr. Eastman advises us that he expects to be ready very soon, but has been delayed by machinists.

As soon as the films can *actually be bought*, our subscribers will be promptly advised. Meanwhile we will "possess our souls in patience."

Mr. J. H. Kent has promised to illustrate the BULLETIN at any early day with a photograph printed from a film negative.

"THINGS IS WORKIN'."

A. BOGARDUS.

SUCH a stirring up in photographic literature undoubtedly means a general advancement all along the photographic line.

1885 sees the BULLETIN twice in a month. A new editor *inside* and a beautiful new cover *outside*—the publishers may well feel proud.

Now, let there be no more *dry-rot* in

the fraternity! Let us all make better work, and get paying prices for it! Let every MAN throw his entire energy, skill and genius in his work—adopt my old motto, *Excel, not undersell.* Let the Cheap Johns severely alone, and they will soon kill themselves. Every man finds his *own level* eventually in this country. The people have had about enough of the trash with which the country is being flooded, and a reaction will certainly give the business to men capable of making superior work.

The American public have always been ready to patronize real merit, and will do it again.

Let the men who for years have been working to elevate photography stand shoulder to shoulder and not be discouraged because an *abscess* has formed and is discharging. It looks bad, and is bad, but it will soon run itself dry, and the patient will come out brighter and healthier because of the cleansing.

FORMULA FOR PRINTING AND TONING EXTRA BRILLIANT ALBUMENIZED PAPER.

THE following is Mr. O'Neil's formula for printing and toning extra brilliant Pensé albumenized paper:

SILVER BATH.

Silver...............	6 ounces.
Water...............	½ gallon.
Liquid ammonia......	1 dram.
Alcohol.............	½ ounce.

Float one and one-half minutes on the above solution. *Fume* thirty minutes. Put the cup containing the ammonia in a saucer or bowl of hot water, when about to *use in the fuming box.*

Wash the prints well in clean water before toning. This will redden them sufficiently without using acid.

TONING BATH.

Water...........	½ gallon.
Bicarbonate of soda	—1 large tablespoonful.
Acetate of soda...	1 teaspoonful.
Anthony's liquid gold, (add just before using)...	1 bottle.

This quantity will tone from 25 to 30 whole sheets of paper, and any tone may be obtained with this formula, to suit all tastes.

FIXING BATH.

Hyposulphate of soda..	1 pound.
Water................	1 gallon.

Fix for fifteen minutes.

This is the formula by which the very fine picture in this number of the BULLETIN *was produced.*

DR. E. L. WILSON, in printing and toning the same paper, for illustrating the *Philadelphia Photographer*, used the following method; which gives *dark purple tones*:

Silver Bath.—50 grains to 1 ounce of water, slightly alkaline; float the paper one and a half minutes; dry thoroughly before fuming; have the fuming box very dry, and fume 30 minutes. Before washing, immerse the prints in a bath of acetic acid and water—one ounce of acetic acid to sixteen ounces of water. Allow them to remain in it until decidedly red. Do not let the prints lie motionless, but move them around in the water. Wash well and then tone. Add enough gold to tone, neutralizing with sal soda. Either test with litmus paper or judge by the slight slippery feeling of the solution. Fix as usual (one ounce of hypo to four ounces of water). They are then put in a solution of salt and water (one quart of salt to ten quarts of water) to prevent blistering. Then wash.

The difficulty with many seems to be the insufficient fuming of the paper, rather than in the bath.

WE take much pleasure in acknowledging the receipt of an invitation to the exhibition at the Providence Amateur Photographic Association, held Feb. 12-13. The committee of arrangements are R. L. R. Mason, R. W. Taft and H. R. Guild, who will please accept our thanks.

FOREIGN NOTES.

[From our London Correspondent.]

DEATH OF MR. HENRY GREENWOOD.

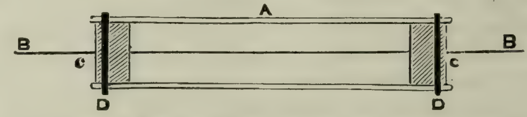
As your readers have already been made aware, Mr. Greenwood, of Liverpool, expired on the 11th of last month. Mr. Greenwood was a man of very exceptional energy and activity, and those who had business dealings with him were constantly reminded of this, and nothwithstanding his extensive printing business and advertising agency—one of the largest in the provinces—he attended to almost the whole of his correspondence personally, and would devote much time to looking after matters of detail in his business. Notwithstanding his numerous business engagements, he would never fail to oblige a correspondent, by giving his advice or assistance when he believed he could be of service. Mr. Greenwood founded several periodicals and newspapers, but the only one which requires mention here is the *British Journal of Photography*. For this journal he seemed to have almost a paternal regard, and on the "making up" day (Thursday) it was rare, indeed for him to be absent from the office, where he would labor hard at the work of reading and arranging the "matter," or in doing other things which proprietors less personally interested would have left to the editors or the proof-readers.

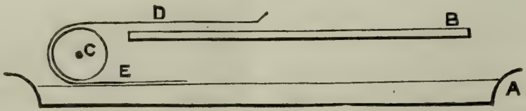
Now, that Mr. Greenwood is gone, the printing department of the British *Journal* will be removed to London, where it will be published by an association styled, "Henry Greenwood & Co." Although it is understood that the family of the deceased proprietor retain some interest in the concern, it is stated that a gentleman well-known in photographic circles over here, holds the principal share.

Coating Paper with Emulsion.—Over here at the present time there is much talk of development printing on paper coated with a chloride emulsion, or rather an emulsion which is mainly chloride, but contains a small proportion of bromide. Those preparing such emulsion-papers on a small scale, generally stumble over the operation of coating, and fail to obtain an even film on the paper. It is therefore unnecessary to apologize for putting before your readers two simple devices for coating paper with gelatine, applicable not only to emulsion work, but also to the preparation of carbon tissue or of transfer paper. One of these devices is due to Captain Abney. and the other to Mr. Cowan, and I quote the descriptions from the *Photographic News*.

Captain Abney first moistens the sheet of paper to be coated, and lays this on a slab of plate glass, after which contact with the glass is established by smoothing down the damp paper by means of a squeegee; that is to say, a strip of soft india-rubber sandwiched between two laths of wood, so that about a quarter of an inch in width of the rubber strip projects. The slab of glass bearing the moist paper being now placed in a level position, a convenient quantity of the emulsion is poured upon it, and evenly distributed by means of a glass roller made as follows:

A glass tube, A, about an inch in diameter and of suitable length, and of which each end is closed by a cork (C C), forms the body of the apparatus; and for convenience in use a stout wire (B B) is run through the corks, as shown. In order to prevent the glass roller coming into actual contact with the paper, two rubber rings (D D) are placed round it, the exact position of these rings being determined by the width of the sheet of paper to be coated. It is convenient that they should be placed so as to be about a quarter of an inch from the edge of the sheet of paper when the roller is in use. It need scarcely be remarked that the roller will drive any excess of emulsion over the edge of the glass plate, and a dish should be so placed as to catch this overflow.





When the layer of emulsion on the paper has set, the sheet may be lifted from the glass and hung up to dry.

Mr. Cowan's arrangement for coating paper consists of a dish, A, containing the emulsion, and near one end of this is placed a glass tube, C, which may either be fixed, or may turn on a pin, like Abney's roller. At about the same height as the top of the roller is a slab of stout glass, B, this being either supported by a board placed over the top of the dish, or in any other way which may be found convenient.

A sheet of paper is now floated on the surface of the emulsion in the dish, and is next drawn over the tube C, on to the slab B, as indicated in the diagram, E D, representing the paper. As soon as the gelatine has set, the sheet may be removed from the glass slab and hung up to dry.

Photographing Bacteria.—Much interest is taken in photomicrographic work at the present time, and at the various meetings one often sees excellent results which have been obtained by comparative beginners; but there are certain advanced branches of the subject, which are touched by a comparative minority, and among these may be mentioned the reproduction of the bacteria. These organisms are, indeed, often so transparent that to obtain satisfactory results without staining them, is quite impracticable, and photomicrographers will therefore be glad to have particulars as to the methods of staining adopted by Mr. Edgar Thurston, of the Anatomical Department in King's College.*

Mr. Thurston, having thus dealt with the question of staining, promises to treat of the purely photographic work in a subsequent paper.

Taking Portraits by Artificial Light.—A method introduced by Herr Eugen Himly, of Berlin, deserves notice. Over the background, and at a convenient height above the sitter is a semicircular rail placed horizontally, and upon this the lamp, whether electric, pyrotechnic, or gas, can be made to travel through any required arc during the time of exposure, the motion of the lamp being governed by a cord or string. It is said that very good portraits have been made in Berlin by means of the electric lamp used in conjunction with Herr Himly's contrivance, but the moving of the light must, one would think, tend to make the sitter move unconciously.

A New Photometer.—Mr. Gorham, a well known medical man residing at Hemmel Hempstead, has devised a photometer in which the expansive action of light upon the pupil of the eye is taken advantage of, and it is not unreasonable to expect that the apparatus in question will be of service to out door photographers in estimating their exposures. Of course it must be remembered that the pupil photometer only measures the intensity of the light and not its actinic power. The following description is taken from *Knowledge:*

This instrument consists of a piece of bronzed tubing, about 1·9 inches long and 1·5 inches in diameter, with one end closed by a disc, in which are a series of pairs of minute holes pierced on radii of the circle, and drilled with absolute accuracy at distances varying from ·05 inches to ·28 inches apart. A cap, with a radial slot in it so narrow as only to leave one of these pairs of holes visible at a time, rotates over the brass disc; and round the cylinder, just below the edge of the cap, the linear distance of each pair of holes is engraved exactly opposite to it. Our first figure represents the cap as seen when looking down on to it. The pair of holes ·10 inches apart are shown as visible through the slot. Fig. 2 exhibits the tube as seen sideways, to show how the figures are engraved upon it. The instrument was originally devised by Mr. Gorham for measuring the diameter of the pupil of the eye under the stimulus of light of varying intensities. It is used by looking through the open end of the tube (the bottom in fig. below), when two discs of light will be seen, like a double-star.

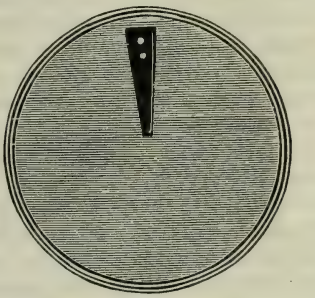


Fig. 1.

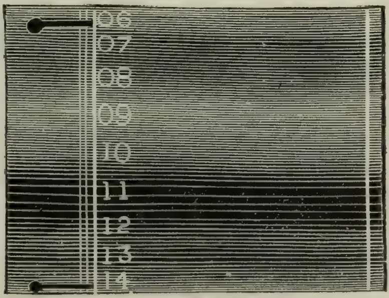


Fig. 2.

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*See paper in Bulletin January 24, 1885, p. 51—*Editors* of Bulletin.

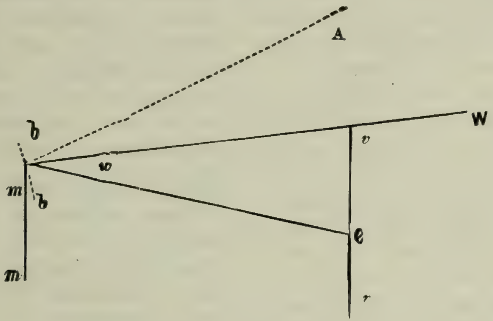
The cap is turned until a pair of these discs appear which are precisely tangent, or just touch one another at their edges. Then may the diameter of the pupil be read off on the scale by mere inspection to ·01 inches. Hence it may be used as a photometer; and for this purpose we proceed as follows:—We set a Sugg's standard candle at a distance of 1 foot from the eye, with a white surface (such as a sheet of foolscap paper) behind it, in a room otherwise totally dark. We now take the diameter of the pupil in the way just indicated and read it off from the scale. Leaving the photometer intact, we substitute for the candle the source of light whose intensity we wish to measure, placing a white background behind it, as in the previous case. Suppose that it is a duplex lamp which replaces our original candle. If we regard this from a distance of 1 foot, as before, we shall find our two discs of light, so far from touching, will be pretty widely separated, and we must slowly retire from the lamp until the circles have expanded sufficiently to become tangent again; when, of course, the pupil will have regained its original dimensions, from the light falling upon it being of identical intensity with that of the candle. It only remains to measure the distance of the lamp from the eye in feet and decimals of a foot to find its illuminating power, which obviously will vary as the square of the distance; *i. e.*, if we have to retire to a distance of 4 feet, the lamp must give the light of sixteen candles, and so on.

A Lantern Slide Club.—Amateur photographers are finding that the best means of exhibiting their pictures is to make lantern slides of them and to now and again give a private lantern exhibition to their friends; and as on such occasions it is generally agreeable also to show some of the slides made by others, Mr. Henry Smith has suggested the formation of a Lantern Slide Exchange Club, or a kind of lending library of slides. The organization is not yet quite complete. There is not much doubt that an association based on Mr. Smith's suggestion will be established. Could not your New York amateur association institute something of the kind? The slides would be catalogued and kept like the books in a library, and each contributor of a dozen slides might be allowed to take out a certain number at a time—say 100—for an evening's entertainment.

Out-door Photography in Winter.—Mr. W. D. Valentine, of Dundee, contributes an excellent paper on this subject in the last issue of the *Photographic News*; and in the same number one of Mr. Valentine's frost pictures is well reproduced by Sprague's Ink Photo. process. Mr. Valentine's plan is to go out in a dog cart and drive a few miles out of town, trusting rather to chance than to preconceived notions, as the transformations worked by frost and snow are so complete and so unexpected as to baffle all previous calculations. Mr. Valentine prefers a slow plate, and gives about one-fourth less than the subject would require in the early spring; he prefers a single landscape lens, and to prevent condensation he smears it over with a trace of glycerine.

Mr. W. E. Debenham on Copying.—How few there are who can obtain a really good copy from a photograph, whether a daguerreotype, a glass positive or a silver print, and yet how perfect are the reproductions which one sometimes sees. In a recent communication to the London and Provincial Association, Mr. Debenham deals exhaustively with the whole question, and thoroughly explains the principles which should determine the arrangement of the original and the camera, and those of your readers who have copying to do will gain much by a study of Mr. Debenbam's remarks.

"In order to get at the principles which govern the occurrence or avoidance of interfering reflections when copying," says Mr. Debenham, "let us take a case of a typical kind, and suppose that a mirror has to be so photographed that the glass shall be represented by blackness, and the frame and any tracery, drawn (say) with French chalk here and there upon the glass, shall be represented in their proper form and gradations in the copy. This supposition is not a fanciful one, but actually represents very closely the copying of a daguerreotype, and may be shown, though somewhat less obviously, to represent the copying of any picture where there are reflections to be avoided. It is assumed that the mirror is vertical to the direction of the camera. Well, an eye placed in the position of the lens will see itself reflected in the centre, and in the various other portions of the mirror will see those objects reflected whose images fall upon the mirror at the same angle as, but in the contrary direction to, lines drawn from the eye to each portion of the mirror. This fact is expressed in the well known law of optics, that the angle of reflection is equal to the angle of incidence. Perhaps a diagram may help to make matters more clear. Let *m m* be a mirror, and *e* the eye of the observer, then if a window exists in the direction of W, the eye will see itself in the centre of the mirror, about the centre of the face of the observer and at *w* an image of the window, together with the various other objects which fill up the intermediate space. All this in place of the blackness which the conditions assume as desirable and even necessary for the objects required. The portion of the mirror where the image of the window is seen will appear so bright, that the chalk marks on the mirror, which were to represent light on a black background, will be dark by comparison.

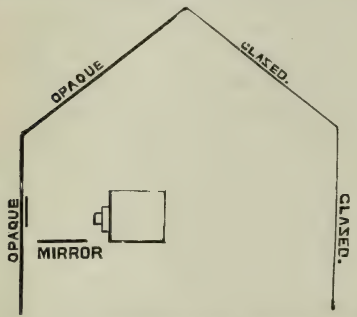


Now let *v v* be a black velvet curtain, with a hole at *e* for the eye to look through ; the pattern traced upon the mirror will show clearly against the black background of the velvet curtain. In order that this blackness may be more perfect, and not interfered with by reflections of the pile or folds of the velvet, or by the reflection of the eye looking through the hole, let there be no source of light in front of the curtain—that is, between the planes *m m* and *v v*, if both of them were extended infinitely—but let the light come from behind the plane of the curtain over its top and round its sides.

It will be noticed that the curtain *v v* must be of such dimensions that lines drawn from the eye to the extremities of the mirror, and returned at equal and opposite angles, shall fall within the surface of the curtain, therefore if the curtain be upon the same plane as the eye, it must be of at least double the dimensions of the mirror. In practice, the dark surface must be larger than this, and for the following reasons: The mirror is assumed, and may be considered, to have a perfectly plane surface. The surfaces with which we have to deal are not perfectly plane ; and although the deviations from flatness may be very small, they will be sufficient to require a certain allowance. The deviations are of two kinds—first, such as may be most strikingly illustrated in a daguerreotype, the plate of which is bent, if ever so slightly. Suppose the daguerreotype to be so much bent that that part of it which is at *w* lies in the direction of the dotted line *b b*, the angle of incidence would be in the direction of the dotted line *w*, A ; and in order to prevent reflections from any light object being seen in the plate, and appearing as false light in what should be the shadows, the screen would have to be extended until it cut that dotted line. A picture to be copied is not likely to be as much out of truth of level as is shown in this diagram, but it is difficult to make slight variations from flatness evident in a sketch. Nevertheless, these variations occur, and must be provided for by a certain extension of the non-reflecting surface.

The second kind of irregularity of surface which requires the extension of the non-reflecting screen is that which arises from the nature of the surface of the picture to be copied—that is, in the case of paper pictures, each elevation caused by the grain of the paper will have a surface on one side inclined towards, and on the other side away from, the source of light. This inclination is very small, but unless it is taken into account, and if the non-reflecting screen be not large enough to include lines drawn from the lens to each part of such inclined surface and carried back at a similar angle, there will be reflections from one side of each elevation or prominence. This will produce an effect which I dare say many will remember to have seen on the top of a copy of a paper photograph—the effect of a blanket sort of texture.

The question now arises, how it is best to carry into practice the principles that have been discussed, and the plan that I adopt is to fix the picture upon the middle of the wall of the shady side of the studio. The studio is of the ordinary central ridge kind, and the south side of both ridge and upright wall is kept opaque. The light from the whole of the opposite ridge and glazed side falls upon the picture, but reflections are in the ordinary way avoided by using a large camera, the front being more than twice as long as the picture to be copied, with a lens of long focus, of course. If the picture is so large, or the surface so irregular, that the surface of the camera is not large enough to make sure against reflections, a background screen may be placed behind it. This, if so far removed from the picture as to receive light from the top ridge light of the studio, should be tilted forward sufficiently to prevent that; or a simple plan may be adopted—that of placing something upon the camera just high enough to cut off reflection.



The light as arranged falls very much from the front, and from a considerable surface—twenty-four feet in length, twelve on each side of the camera—so that the grain of the paper is not very evident. In order, however, to make it still less so, a mirror is placed horizontally below the picture, between it and the camera. A sheet of white card may be substituted as more convenient than the mirror, but is not quite so good.

The Purification of Albumen and its Use as a Substratum for Dry Plates.—Dr. Reichardt points out that a stream of carbonic acid purifies albumen from all traces of membranous matter, and it is pointed out that the most convenient way of using the carbonic acid is to take ordinary aërated water or the so-called soda-water. The *News*, acting on this idea, gives the following formula for a substratum suitable for coating glasses, which are to be afterwards coated with a gelatine emulsion:

White of two eggs.
Soda water .... 1 bottle.
Beat well and add—
Soda water .... 1 bottle.
Carefully filter, and—
Make up to 30 ounces with distilled water
Then add—
Soluble silicate of soda ..... 1 ounce.

To use this, flow it over the cleaned plates, and allow the excess to drain off at one corner.

An Extensive Album.—The Sultan is organizing a big thing in albums. It is to include, in the first place, all the ladies of the harem—no inconsiderable number, if rumor has it rightly—while after these come the superior officers of the household. The Ministers of State and their subordinates come next, and finally the servants and artisans attached to the Court. The whole collection is to be bound in a series of handsome volumes, and they will be kept in a special apartment. The followers of the "True Prophet" seem to have quite overcome their religious objections to photographic portraiture.

Photographic Exhibits at the Inventions Exhibition.—It is satisfactory to find that arrangments have been made for including in the next exhibition at South Kensington a complete collection of apparatus and prints to illustrate the gradual progress of the art of photography. As the executive found that, under the existing regulations, many objects of great photographic interest would be left out, they invited the Photographic Society to make a collection of such apparatus as may possess historical interest, and of specimens illustrative of processes, which are now almost out of use. Perhaps some of your readers may be able to furnish contributions to this collection, and in this case they should communicate wtth Captain Abney or Colonel Stuart Wortley, at the Science and Art Department, South Kensington, London, S. W.

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EXPOSITION JOTTINGS.

Every department of the great exposition is still in progress, none complete, but the exhibitors are working hard, and the clang of hammers and the shirr of saws is heard on all sides.

It is now thought, that by the middle of January all will be complete, and then a more elaborate and more satisfying opening will be given. For those who have to come and wait, there should be a certain charm in watching the development of these exhibits, and their growth from germ to full completion.

We may liken them to buds and blossoms in this great garden of modern civilization, and so watch their spring-time, the starting leaf, the swelling bud, the opening flower, until the full bloom of perfect summer comes. The writer has so watched, with curious interest, the growth of those wonderful creations in the Government building, and will view them completed with ten-fold admiration from having seen them grow.

Yet there is much talk and dissatisfaction about not being ready, and some complaint against the management, but all admit the greatness of the exposition; even now, though many seem to forget that the delay is largely due to the immense increase of size in the Exposition over what was first intended.

The first idea was a Commemorative Cotton Show, about the size and importance of the annual fair of the American Institute, with interchange of courtesies and products between Mexico and the United States. Then the general Government stepped in and raised it to the dignity of a World's Exposition, where all nations are represented, and where each of our States makes an exhibit worthy of a separate nation. No wonder the management have not been fully equal to the vast increase of labor and responsibility. Yet if we look at what has been done, instead of what is lacking, we cannot say they have been unworthy of their charge. They have risen nobly to their duties, and have only come short because ordinary mortals cannot perform the the labors of Hercules. The ancient athlete, who began by carrying the calf, and came finally to carry him an ox with the same ease, had time to grow equal to his gradually increasing burden; but even Hercules, if the calf had grown suddenly to an ox on his very shoulders, might have succumbed to the burden without disgrace.

If people would look at it from this point of view, they would have less complaint and more of praise to give.

And, even now, those who complain most are those who have least power to comprehend the great lessons to be learned from what is now ready.

It is as if people invited to a feast, had set before them so many dishes they could scarcely contain even a taste of each, much less digest and assimilate them, yet complained because there was not more prepared for them.

An intelligent two-weeks' tour of Main and Government buildings and Horticultural Hall, would, even now, give a better knowledge of the extent, resources and varied productions of the world, than years of ordinary travel. It is the world in a nut-shell, with the rare and strange and beautiful winnowed from the coarse and commonplace, and gathered side by side for immediate comparison—time and distance eliminated.

People and productions from every climate may be seen here in close relations, yet, with their individuality fully preserved, and their peculiarites sharply contrasted.

Those who want pleasure, those who want knowledge, those who want to discover new avenues to wealth, will all find here abundant occupation. Come and see for yourselves, in the "three months of June" that will smile over this fair land while the howling winds of February, March and April are blowing over the frozen North.

NEW ORLEANS, January, 1885

THE PHOTOGRAPHIC MERCHANTS BOARD OF TRADE.

As we noticed in our last issue, this meeting was held at the Metropolitan Hotel, New York City, and a large representation of leading houses was present. Amongst those present we noted the following gentlemen: Orville Allen, of Allen Brothers, Detroit; Geo. R. Angell, Detroit; Mr. Bachrach, of Bachrach Brothers, Baltimore; Mr. Blair, of the Blair Tourograph Co., Boston; J. W. Bryant, La Porte, Indiana; John Carbutt, of Philadelphia; Mr. Robey, of C. H.Codman & Co., Boston; Edward Cope, of A. M. Collins, Son & Co., Philadelphia; Cooper & Co.; J. D. Dexter, of Portland, Me.; Mr. Douglass, of Douglass, Thompson & Co., Chicago; Benj. French, of Boston; G. Genert, of New York; T. F. Indermill, of St. Joseph, Mo.; J. F. Magee & Co., Philadelphia; Mallinkecrodt Chemical Works, St Louis; H. D. Marks, Rochester, N. Y.; R. H. Moran, New York; Geo. Murphy, New York; T. H. McCollin, Philadelphia; Mr. Hill of Phœnix Dry Plate Co., Worcester, Mass.; H. Q. Sargent, of Cleveland, Ohio; W. Irving Adams, of Scovill Manufacturing Co.; D. K. Cady of P. Smith & Co., Cincinnati; David Tucker, of Buffalo, N. Y.; Mr. Wilson, of Wilson, Hood & Co., Philadelphia; Mr. Wolf, of Wolf & Cheyney, Philadelphia; Mr. Smedley and Mr. Bromley, of the same city; Geo. Eastman, also of same city; E. Anthony and V. M. Wilcox of E. and H. T. Anthony & Co., New York; and a number of other representative gentlemen. Many matters of interest were discussed. Mr. Gayton A. Douglass read a paper giving statistics of the business relating to photographic trade, which has been ordered to be printed; and a committee was appointed to obtain further statistics and to report at a future meeting. Appropriate resolutions were adopted, relating to the death of Mr. Henry T. Anthony, and a committee appointed to present a copy of them to Mr. E. Anthony, his brother, and his late partner.

The following officers and managers were elected for the ensuing year:

President, Hiram J. Thompson, Chicago, Ill.

First Vice-President, Benj. French, Boston, Mass. (of Benj. French & Co.)

Second Vice-President, David Tucker, Buffalo, N. Y. (of David Tucker & Co.)

Third Vice-President, R. B. Mullett, Kansas City, Mo. (of Mullett Bros.)

Treasurer, Jason C. Somerville, St. Louis, Mo.

Secretary, D. K. Cady, Cincinnati, Ohio. (of P. Smith & Co.)

Managers, Orville C. Allen, Detroit, Mich. (of Allen Bros.)

Gayton A. Douglass, Chicago, Ill. (of Douglass, Thompson & Co.)

W. H. Robey, Boston, Mass. (of C. H. Codman & Co.)

W. D. H. Wilson, Philadelphia, Pa. (of Wilson, Hood & Co.)

E. O. Zimmerman, St. Paul, Minn. (of Zimmerman Bros.)

After the election, Mr. Gayton A. Douglass announced that he had a pleasant surprise for the members, and he presented the retiring secretary with a handsome gold watch and chain. Mr. Angell responded in a very appropriate manner.

We shall give a full report of the meeting in our next issue.

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PROCEEDINGS OF THE EXECUTIVE COMMITTEE OF THE PHOTOGRAPHIC ASSOCIATION OF AMERICA.

GENESEE HOUSE, BUFFALO, N. Y.,
JANUARY 12TH, 1885.

EXECUTIVE Committee meeting called to order. W. A. Armstrong elected Chairman, Joshua Smith, Secretary.

Present. J. Laudy, W. Armstrong, Joshua Smith, Leo Weingartner, H. McMichael, J. F. Rider. (By invitation).

Mr. ARMSTRONG stated he had received a letter from W. H. Sherman in regard to his report as Secretary of this Association, for the year 1883. Mr. Sherman stated that he sent Leo Weingartner his report. Mr. Weingartner said he had no recollection of receiving said report.

Mr. SMITH made a motion, which was carried, that Mr. Laudy and Mr. Weingartner be appointed a committee to look up this report and make proper acknowledgment to Mr. Sherman.

Mr. ARMSTRONG reported the total receipts for the year 1884 to be $3,792.30. Expenditures $3,200.86. Balance on hand $591.44.

Mr. WEINGARTNER said he had in his possession $10 received from Mr. Spurgeon, which he turned over to Mr. Armstrong, increasing balance on hand, to $601.44. Report of Mr. Armstrong accepted.

In the itemized report of the Treasurer there was an omission of the names of several of the largest contributors to the Association fund among them, Mr. G. Cramer, Mr. L. W. Seavey, the Blair Tourograph Company, Mr. J. C. Somerville, Mr. G. Genert, Hyatt and Mr. Gustave Bode.

Mr. WEINGARTNER stated that the contributions of the above gentlemen were included in the $840.00 turned over to the Treasurer in bulk, and all contributions for advertisements in the book were his own individual property.

Mr. ARMSTRONG reported a bill from Scovill Manufacturing Company of $55.00 for damage to Camera Box, and asked for action. Mr. Landy was appointed a committee to investigate this case, and learn if possible by whom the box was broken; and if Association be found responsible for the damage, to order the bill paid. Adjourned.

JANUARY 13.

Meeting called to order. Full committee present, including G. M. Carlisle, who had failed to receive a notice of meeting until the 12th, but arrived this morning. Minutes of last meeting read and approved. Mr. Leo Weingartner tendered his resignation as Recording Secretary of the Association. Resignation accepted.

President LAUDY appointed H. McMichael, of Buffalo, his successor.

It was decided to fix the date for the Convention, July 14th to 18th, inclusive, at Music Hall, Buffalo, New York.

By vote it was ordered that $150 be placed in the hands of the Secretary to commence the duties of his office.

The amendments as passed at Cincinnati were placed in their respective sections in the Constitution, and 300 copies ordered printed.

The Treasurer was instructed to mail to each member a notice asking payment of annual dues.

The matter of securing badges was intrusted to the Secretary.

Instead of receiving contributions from stock dealers and the manufacturers of accessories and appliances pertaining to photography, it was determined to charge 15 cents per square foot for all space in the centre of the Main Hall, and 10 cents per square foot for all space outside of the main centre.

JANUARY 14.

Meeting called to order. Minutes read and approved.

Resolved, That the stock dealers of the country be asked to co-operate with the Executive Committee of the Association in securing reduced rates from railroad and steamboat companies for transportation to the Convention at Buffalo. Passed.

Moved and seconded, that Mr. McMichael be constituted a Committee on Hotel Accommodations.

Moved and seconded, that Mr. Smith be empowered to secure the services of a stenographer. Passed.

Resolved, That each of the Executive Committee furnish a practical paper upon the subject of photography, or procure some competent person to present such paper, the reading of which shall not consume more than 10 minutes. Passed.

By Mr. LAUDY—

Resolved, That Messrs. Joshua Smith, of Chicago, G. Genert, of New York, and J. F. Rider, of Cleveland, be a committee to solicit an exhibition of foreign photographs for the Buffalo Convention. Passed.

By Mr. ARMSTRONG—

Resolved, That to secure a proper attendance at the morning sessions it will be necessary to close the stock department and the exhibit rooms between the hours of ten and twelve o'clock A. M.

PROGRAMME.

Morning session.—Tuesday, July 14, 10 A. M.

Address of welcome, by Secretary, introduction of the President's address, reports of committees.

Appointment of committee to nominate officers and location for next Convention.

Miscellaneous business.

President's annual report.

Afternoon session.—Reading papers pertaining to the interests of photography, discussions on practical photography.

Wednesday morning session.—Report of nominating committee, paper on prices, by the President; discussions.

Afternoon session.—Opening of question box; five minutes discussions.

Thursday morning session, from 9 to 11 A. M.—Report of committees; papers on dry plate photography; ten minutes discussions on dry plates.

Afternoon.—Niagara excursion.

Friday morning session, 9 A. M.—Election of officers; miscellaneous business.

Afternoon session.—Discussion on prices.

Evening reception open to the public from 6 to 11 P. M.

Saturday morning session.—Closing ceremonies.

Resolved, That a copy of this report be sent to each of the different photographic publishers simultaneously.

Adjourned.

JOSHUA SMITH, *Secretary.*

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

JANUARY 13TH, 1885.

PRESIDENT BEACH in the chair.

The President announced that there would be a special meeting on January 27th, at which there will be exhibited a fine set of daguerreotypes, and a demonstration of the wet process by Prof. Laudy, of Columbia College. At the close of the meeting a photograph of the audience will be taken. On February 10th, Mr. Chas. A. Pancoast, of Philadelphia, will exhibit his lantern slides of India, and explain his trip there.

A letter was read from the Amateur Society of Haverhill, Mass.

Mr. H. Beattle was elected an active member of the Society.

The report of the committee on the New Orleans Exposition reported that seventy-five prints had been sent in by the members, and these were mounted and arranged in frames, by Mr. C. A. Needham. A frame of portraits was sent by Mr. S. S. Sanford, and one of Adirondack views by Mr. G. Johnson, of Bridgeport, Conn. This Society has the largest exhibit of any amateur association.

During the past year the following journals have been received :

The Photographic Eye, *The Printer and Lithographer*, *The Amateur Photographer*, *British Journal*, *Photographic News*, direct from the publishers. Through Mr. Beach, *The Wochenblatt* and *Scientific American. The Philadelphia Photographer* and *St. Louis Photographer* were also received.

"The Practical Guide to Photography," "The Modern Practice of Photography," "Note Book of Photography," and other books, were donated to the Society.

The first number for this year of ANTHONY'S BULLETIN has been received. This is now to be issued twice a month under a new editor, Prof. Chandler, of Columbia College. A few copies of the *Photographic Times* have also been received.

Vote of thanks given to the various publishers.

MR. BEACH—Any of the members who have a great many photographic books, no matter how old, that they do not want, we should be glad to have them sent to the Society. They should be sent to Mr. H. B. Parsell.

Since the last meeting we have received through Mr. Parsell a large developing tray and improved enlarging stands.

The Secretary read a resolution which he had prepared:

That the Executive Committee be instructed to take measures to prepare a presentation print to be presented to every member on record on the first of April. The print shall be made from a negative exposed and developed by a member by the silver, carbon or any other process. A member may make more than one print if he wishes, and one shall be chosen by judges, which the President shall appoint.

Resolution adopted.

Mr. BEACH referred to the photographing of a ghost, an account of which was published in the *Times* of January 2d, and said that the part he took was the lighting of the ghost, and Mr. Taylor exposed the picture. A piece of tin was constructed with a bottom, which opened up like a pocket. The magnesium wire was held right in front, which, after burning for three or four seconds, was moved round suddenly, changing the shadows. Mr. Beach tested this in Brooklyn, and the experiment was quite successful, as far as photography was concerned.

The magnesium was held by a pair of pliers.

Mr. CARBUTT said that some years ago he had had quite an experience with the magnesium light. He had photographed the first Chicago tunnel at midnight by its use.

The Secretary announced that some one had said that he had an 8 x 10 revolving back camera with six kitts for 6½ x 8½ plates, together with a ten-inch wide angle Morrison lens, which he would sell for sixty dollars, and thought it would be a good opportunity for any one of the members who needed anything of this kind to obtain it cheap.

Mr. BEACH then introduced Mr. J. Traill Taylor, who, he said, would give them an informal address on the subject of photographic lenses.

Mr. TAYLOR then addressed the meeting on the subject indicated. Commencing by giving an explanation of the various terms made use of in connection with photographic optics. He then spoke of lenses and explained how they were made, showing specimens of these at their various stages of grinding, from the rough glass to the finished lens. He spoke of the different classes of lenses issued by different makers, and the special characteristics of each. By means of diagrams, he explained the causes of the faults and shortcomings that are sometimes met with in lenses, and showed, by aid of the blackboard, what was meant by the equivalent, conjugate and solar focus of combinations, and in what way the knowledge of this was serviceable in several classes of photographic work.

The lecture occupied an hour in delivery, and it was illustrated throughout.

Vote of thanks given to Mr. Taylor for his instructive and interesting talk on lenses.

A new detective camera, or a camera for taking instantaneous pictures, made by Mr. W. T. Gregg, was exhibited.

It is in the form of an ordinary traveling box, and is carried sideways to take the pictures.

By pressing what appears to be one of the knobs on the apparatus a trigger is released and the shutter set off. No focussing needed. Arrangement made at a fixed focus. In the box behind the camera proper there is a partition made for the plate holders, which are made of metal, and there is no chance of an extra sensitive plate being fogged, as sometimes happens with paper holders. The plate rests against a little spring at the bottom, and when the plate is inserted a flap of felt at the top turns down. The mechanism of the shutter is perhaps the most ingenious part of the apparatus, and it is made in the shape of the figure five.

Another apparatus made on the same principle was exhibited. Though very small, it is possible to obtain extremely sharp pictures with it.

A sample of the work done with this camera, and an enlargement from it, was shown. The apparatus, camera, lens, shutter and plates, weighs but two pounds and three ounces

Mr. PARTRIDGE said that the trigger on an instantaneous apparatus of that kind should be a hair trigger, and put in a sunken pocket, or else the trigger would be apt to go off when not wanted. That was the fault he found with detective cameras, and he had experienced much annoyance at Brighton Beach when in a crowd by the trigger going off.

Mr. TAYLOR was made an honorary member of the Society, in appreciation of his special efforts this evening and his general services to photography as a science.

Mr. FISK—I have a picture with me, which I took about a month ago, of trotting horses. I used four rubber bands to drive the shutter. I used the Monroe developer, double strength. I took four pictures one right after the other. I developed the first one with the normal strength of the soda, but I only got a faint image of the high lights. The next plate I tried with the double strength of the soda and got a little more detail. I went to wash the developer from the other plates, and I noticed that the water carried off a sort of scum, leaving the gelatine of a creamy color. I thought it was barely possible that this scum had something to do with the retarding action of the developer. I put the plate back in the developer, and when I saw the shadows come I began a soft rubbing with the finger over the film. The result was that the detail came out slowly in the shadows, and in twelve or fifteen minutes I had a perfect picture.

Mr. BEACH—Did you mention that the scum was on the plate before the developer was applied ?

Mr. FISK—No, sir. I should like to have some of the amateurs test this, and see if they get the same result.

Mr. COOPER—My impression is that the action of any alkali upon gelatine is to soften it. By the removal of it, either with the finger or brush, you remove a great deal that would have a restraining influence. I use the same method as Mr. Fisk, only I use a brush when I have rapid pictures to develop. I pour out a few drops of my strong pyro solution, and when the high lights come up dip the brush into the pyro, dry it off on the sides of the dish, rub it round, and the shadows come up surprisingly. Another method is that previous to development place the plate in a solution of soda; after about thirty seconds there, give it a very thorough washing under the tap.

I have given the reasons for this before, and they are published.

A GENTLEMAN said that he thought the results of Mr. Fisk's experiment were remarkable. The rubbing of the film, he thought, was due to two things: One the rubbing, the other the warmth of the finger. A brush will keep the developer fresh on the film, but the warmth of the finger must have something to do with it. He had frequently brought out portions of the shadow by warming the plate with his breath. He also indorsed Mr. Cooper's method of washing the plate with ammonia or soda. Some years ago Col. Wortley wrote an article, published in the *British Journal*, in which he recommends previous treatment of of the plate with the alkali. The next year another article by him was published, in which he confirms his previous opinion as proven by the experience of the year, and he also recommended keeping the pyro solution where it would not lose its strength. He had followed his suggestion as to the previous washing of the plate with good results.

Another method from his own experience was that, in developing an under-exposed plate, which an instantaneous picture is supposed to be, when the high lights appear hard and there is no detail in the shadows, he took the plate out of the developer at once and put it in a weak solution of alkali without fixing, and let it remain in this (saturated solution of soda one part, to seven or ten of water) for a long time without any danger of fog. When the details in the shadows appear, the plate is put back in the developer.

Mr. SPAULDING—With regard to using the brush and putting the plate into an alkali solution to hasten the shadows, it seems to me the alkali would be the thing to apply with the brush instead of the pyro?

Mr. COOPER—I simply use the alkali as an aid in pursuance of a theory I have been working at. The plate can be washed without using any alkali at all. My theory has been fully explained in print. I don't believe it needs more than the slightest possible alkalinity in pyrogallic acid to develop. If the the pyro is neutral there is no development. I have worked with half a grain of soda to four grains of pyro, but it developed very slowly.

Mr. NEWTON—I want to correct an error which seems to be almost universal among those who are developing dry plates with alkali, that soda is a solvent of gelatine. Acid is supposed to dissolve gelatine. It will liquify it but not dissolve it. The gelatine on a dry plate is not insoluble in water any more than before it was dry.

Mr. PARTRIDGE—I wish to enter a protest against Mr. Cooper's method of treating plates before development. I made several exposures at Bridgeport, and two of them were under-exposed. I tried just what Mr. Cooper has told us, and found the plate was over-exposed. Meeting adjourned.

OFFICIAL REPORT.

[Special Meeting.]

A SPECIAL meeting of the Society was held at their rooms, No. 1260 Broadway, on the evening of January 28, 1885. The meeting was called to order at 8.20, President Beach occupying the chair. He announced the programme for the evening, and then introduced Prof. L. H. Laudy, of the School of Mines, Columbia College, who briefly described the daguerreotype process, and followed with an illustration of the wet-plate process.

Prof. LAUDY: Mr. President, ladies and gentlemen,—I shall endeavor to go over the ground as rapidly as possible, and without approaching anything that might have the appearance of a historical sketch of the subject, we will at once confine our remarks to the process as formerly used in the production of the daguerrotype. It would hardly interest you to go into each detail—the preparation of the plates and the difficulties that were encountered in the early experiments in the preparation of these plates—so we will assume that the apparatus is ready for manipulation. The first operation is the preparation of the plate. It consisted, as then used, of a copper plate silvered upon the surface. This silver was deposited by electrolysis. It was then placed in a light vise, and the edge of the plate turned and then carefully buffed. [A specimen vise was shown.]

My early introduction to the science was just when the daguerrotype was going out, and I can well remember my vain efforts in the direction of buffing a plate without scratching. To buff a plate without scratching was a piece of art in those days. The plate after being buffed was exposed in the coating box. To enable you to better understand the process, I have here the apparatus. [The speaker operated the daguerrotype sensitizing box, going through the different movements.]

This box is provided with a glass plate, secured on the underside of the moving sliding lid, which prevents the escape of the fumes of iodine. The box is one in which the iodine is vaporized, and the iodine coming in contact with the silvered surface, when the part of the lid containing the silvered plate is pushed over the iodine, produces iodide of silver. The plate was placed in whatever kit frame might suggest itself. This box was designed to make a 4-4 picture, or what is known as the 6½x8½. The plate, after being buffed, was placed in one of the kit frames, and the slide pushed through and exposed to the iodine. The iodine gives off vapor at a moderate temperature, and the plate was kept there for a certain length of time, when it was drawn out and carefully examined, and it was found that a curious change had taken place. After the proper tint, which required a great deal of practice to determine, was reached, it was changed into a box similar to this containing bromine.

The plate is then exposed in the camera; not the delicate and graceful instrument that you have to-day, but a clumsy piece of apparatus of the shape that is exhibited here to-night. The plate-holder has a back minus the hinges, which we have to-day, and the earlier boxes were not made to telescope one into the other, and if you wanted to change the focus or distance, you had to put it in another opening. The next step was the telescoping of the boxes. After the exposure was determined upon, then came the development of the picture. That was carried on in one of the developing boxes such as I show you here. [The box was made of iron, the apex of the cone being down, and the top arranged to hold an exposed plate face down in a flat position; a groove on the inside of the box permitted a thermometer to be inserted.] The conical-shaped box contained a little globule of mercury placed in the bottom, and under that a spirit lamp. The temperature used was about 80° to 110°. To determine this, a thermometer was placed in the side of the box. The plate came from the camera after being exposed, was placed in one of the boxes already mentioned. It was then allowed to remain for a short time over the mercury in the box, then with a good deal of anxiety that always attended the daguerreotype process, you carefully peeked into the developing box to see if the picture was making its appearance.

It would not take a great while to determine the success or the failure of the picture, and for a long time the success was less than the failures. It was always with a great degree of caution and nervousness that the pictures were examined. Finally the pictures were developed. Many of the boxes used were made with an angle varying from 40 to 48, and may be up as high as 80°, at which the plate should be held over the mercury. Finally that was done away with, and it was found that the horizontal position was the best.

The picture was then fixed with hyposulphite of soda. The slight difference in color between the surface of silver and mercury prevented your being able to see the picture unless held in a certain position with regard to the light. The introduction of the toning process, or rather a changing of the metallic surface of silver to that of gold—there being a slight difference between the color of gold and mercury—allowed the picture to be viewed with greater ease. In other words, it reduced the mirror-like surface, and gave it a more generally pleasing effect to the eye.

I have here a few daguerreotypes which I brought, thinking they might be of interest, and I will pass them around for inspection. The size, of course, was somewhat limited, and after you passed the half-size picture, it was considered quite a good-sized daguerreotype. A 4-4 picture was considered a marvel in its way, and very few attempts were made in this city in this direction, and the only ones who made a success of it were Fredericks & Co. The pictures made at that time of such men as Daniel Webster, Charles Sumner and Wendell Phillips, were made by Messrs. Fredericks & Co., on 5x7 plates, and were exhibited at the World's Fair, held in the City of London, in the year 1851. These pictures were then brought back to this country, and some years ago were exhibited in the Union League Club House. While there, Prof. Chandler noticed down in a corner of one of them the words, "For Sale," and thinking it would be a rare chance to secure them for the School of Mines of Columbia College, purchased the entire lot. We now have at the school a number of the 4-4 size. The question might be asked us why the pictures have not been exhibited. I have a very good reason for not doing so. We were in the habit of loaning those pictures to various parties for various purposes, and also of allowing people to take them away to show their friends, and we, ourselves, occasionally took them from the building for some purpose or other.

Finally, the *Century Magazine* asked us to allow it to make a steel engraving of Daniel Webster. We consented, and while in the hands of the artist, who evidently was not used to executing engravings from pictures of this class, it suffered severe injury. In the process of engraving, the artist took a cloth and wiped it over the face of the picture. The consequence was that Daniel Webster was nearly wiped out. We also loaned one of the daguerreotypes to a leading photographer in this city, and that was the last we ever saw of it. This was a picture of Mr. Charles Sumner. We have now made a compact that none of those daguerreotypes shall be allowed to go outside of the building. We have them at the College on exhibition.

So much, then, for the daguerrotype process as practiced, and it is hardly necessary to enlarge upon this industry. Probably no branch of science ever received such an impetus as this—the making of the plates, the cases, the furnishing of the material, and, beside, the competition in the trade was probably sharper in the days of the daguerrotype than any other period. It mnst be borne in mind that there were many difficulties to be overcome, and that the pictures could not be duplicated except by allowing the camera to shine directly upon you. In other words, you had to bring the camera to bear upon the object every time you desired to take a picture. While Daguerre was making his experiments you will remember that an Englishman by the name of Henry Fox Talbot was making some improvements in the art, which, while his method differed somewhat from that of Daguerre, it was really laying the foundation for the whole science of photography. It is the elaboration, or process of evolution, which forms the works of Talbot, and it is hardly fair to assume that either one of these gentlemen should have the credit of the entire discovery. It is, however, proper to state that to Talbot belongs the honor of being the first to produce a negative by means of which duplicates could be made. I have here a few more daguerretypes that might be passed around if you care to examine them, but I do not want to burden you with too much on the subject.

When we secured this apparatus to which I have referred, it was being used by a leading Brooklyn photographer, who had tried to revive the art, but who had become rather discouraged from parties who had visited him, and I was instrumental in bringing about the purchase of the apparatus. An offer was made to him for the entire apparatus, which he was quite willing to dispose of, as he said he had become disgusted with his efforts to re-establish the lost art. It is fairly safe to presume that this is the only complete set of apparatus of the kind in this country. In 1879 the last daguerreotypes made in this country were executed under my supervision at the School of Mines, some of which I have here to night and some of which adorn the College Museum.

The PRESIDENT: What was the usual exposure?

Prof. LAUDY: That was reduced very much in after years. The iodine exposure was rather long, but in the latter part of 1841 President Barnard, of Columbia College, and Dr. J. W. Draper, made some experiments in the use of chlorine to increase the sensitiveness of the plates. Shortly after that Goddard introduced the use of bromine that superseded the chlorine, and the bromine was much more sensitive, and that reduced the time ot exposure. Professor Barnard states that he made instantaneous daguerretypes with the chlorine process. It is fair, perhaps, to say that he has really the honor and the proper claim to the first instantaneous pictures, particularly by the daguerretype process.

Mr. GEO. G. ROCKWOOD: I have seen many made in the West by Eastman, in St Louis, something like twenty-seven years ago. He was very skillful, and made many instantaneous pictures, I suppose there are thousands of them still in existence—beautiful, artistic pictures of outdoor scenes. That was accomplished by the iodine and bromine together.

Prof. LAUDY: That, of course, reduces the time of exposure. It is probably from fifteen to twenty seconds, varying with the day and the season of the year.

Mr. ROCKWOOD: I should say about thirty seconds on the ordinary plates.

Prof. LAUDY: The first pictures by the daguerreotype process were made in this country by Dr. John William Draper. No attempts at portraits were made by Daguerre. All of his earlier experiments were the production of landscapes. America lays claim to the first portrait, which was made by Dr. Draper and was presented to Sir David Brewster, who had previously made the statement that a portrait by this process was an impossibility. This picture made by Dr. Draper was presented to Sir David Brewster, as mentioned, and is to be found in his collection in England. There is a long history connected with this subject, which is extremely interesting, and one thing suggests itself so rapidly after another that it would consume the entire evening if I related them all. I will, therefore, with your permission, pass on to illustrate the wet-plate process, as requested by your President.

Without giving you anything of a sketch of the attempts which were made in the change from the daguerreotype to the making of the negative, which is a history within itself, I will simply say the first attempts in that direction resulted in what are known as the melainotype and the ambrotype. Persistent efforts on the part of the investigators to get a method by which these pictures could be duplicated were made, and the dream of the negative was a persistent one, and it finally reached a point at which it placed photography on an entirely new basis. There were certain difficulties to contend with in the wet-plate process, and when it was at its height, which was during the war, there were but very few extremely skillful photographers, while there were a great many others who were groping in the dark.

The wet-plate process had a great many annoyances; the uncertainty of the bath—how little we knew the chemistry of the bath, and how we trembled with fear when we went to the dark-room; almost as much so as you would go to the dark-room to see a daguerreotype developed. Everything that ingenuity could devise was attempted in the production of dry plates; coffee, glycerine, sugar, everything to make a preservative, as it was called, by washing away the nitrate of silver. Of course, the idea of gelatine had not been suggested. When the negative process became perfect within itself, of course, it not only gave an impetus to the portrait business, but opened the great field of operation in mechanical photography. It became possible to make reproductions, not alone of the human figure, but of steel plates, paintings, reproductions from valuable pictures, and this branch has developed into a larger industry than did ever the portrait business. It is now representing probably half a dozen different leading processes. Those that are printed from the gelatine direct, or by which the copper is deposited on the gelatine or some surface, and those by means of which we have the finished stereotyped plate for typographical printing. These are some of the strides which the wet-plate process produced in these different branches of photography, and established a most important industry.

The wet-plate process consists in having your solutions and preparing each negative individually as you wish to use it. This was not accomplished, however, until the introduction of collodion by Scott Archer, which made it possible to produce a stratum upon the surface of the glass by which you could hold the iodides and bromides in suspension. In the early days of the wet-plate process the glass required to be cleaned. That was a great accomplishment, almost as much as was the preparation of the daguerreotype plate, and the glass-cleaner—a man who could properly clean the glass—was one of the best things to secure in the profession: a man that you could depend upon every time to give you a clean glass. A dirty plate meant a double failure. The least mar left a permanent mark that destroyed the picture. This method of cleaning lasted for some years, until the idea of albumenizing the plate did away with the difficulties above mentioned. The glass plate was first either placed in an alkaline solution and then in an acid solution, and then rinsed with water, and finally albumenized with a weak solution of albumen. The collodion is prepared by a mixture of ether and alcohol, to which the gun-cotton is added, and then the soluble bromides and iodides. I have here a plate which I wish to prepare, so I will sacrifice it in order that you may see the changes that take place in the silver solution. The collodion is poured upon the plate, allowed to enter close to the edges and go down on the side carefully, and then turn the surplus back into the bottle. [The speaker successfully flowed the plate with collodion, gently rocking the plate.] Now, we have upon the plate that I hold in my hand a film of collodion holding in suspension the soluble bromides and iodides. When this is set it becomes somewhat tacky. It is then plunged into the solution of nitrate of silver, about 40 to 50 grains to the ounce. I am very sorry that the front of this box is not removable, so that you might see the changes as they take place. Without wasting time, however, or waiting for this plate, as it is simply for the purpose of showing the changes that really take place, I will take the plate out of the solution, and you will be quite convinced, I am sure, that a change has taken place upon it. The nitrate of silver has permeated the surface and altered the salts into the bromides and iodides of silver, precisely the same as what is done on the daguerreotype surface, only under different conditions. In the case of the daguerreotype the deposit was produced from the vapors of the iodine and bromine, whereas in the wet-plate process the reactions that take place are in the liquid form. With the next plate I will make an effort to reproduce, if I can, by this wet-plate process, the statuette which you see before you, by the aid of a magnesium lamp I have here, and will go through the operation of sensitizing the plate and then exposing it in the camera, then developing and finally removing the unaltered salts of silver by hyposulphite of soda or cyanide of potassium.

[The operation of taking the picture was then performed in the presence of the audience, and the various steps explained by the speaker. An under-exposed negative was the result, owing, perhaps, to too short an exposure of the plate to the lighted bust, in consequence of stopping the magnesium light too soon.]

The PRESIDENT called the attention of the members to the rapidity of the development.

Prof. LAUDY: I will now close my remarks by thanking the Society for this opportunity of presenting the subject of the daguerreotpye process before it. I feel that I should congratulate myself upon the interest you have manifested in what I have had to say, and also upon the fact that so few chairs are vacant on such a cold and bitter winter's night. Again thanking you for the attention you have accorded me, I will bring my remarks to a close.

Dr. JOHN H. JANEWAY: Mr. President, I think that all present will agree that we have been much entertained and instructed by the remarks of Prof. Laudy, and I move that the thanks of this Society be extended to him, and that he be made an honorary member of the Society.

Motion was carried unanimously.

(*Continued in next issue.*)

Bibliography.

The Year Book of Photography for 1885, edited by Thomas Bolas, F. C. S., came to hand too late to be noticed in our last issue. It is impossible to do justice to such a mine of photographic wealth in the space at our disposal, but when we mention that such men as Capt. Abney, W. K. Burton, F. Cobb, Col. Dawson, J. Elsden, I. H. Jennings, Arnold Spiller, Romain Talbot, Dr. Eder, and Dr. Vogel are contributors, with a large number of other well-known authorities, we are sure our readers will understand the great value of this ever welcome annual. The front illustration is a very fine photogravure of the late Henry Baden Pritchard, taken in February, 1884, in Algiers. It is one of the best pieces of work of this kind that we have seen. We also have other pictures illustrating the application of photography to type-block printing, and one of these is an admirable illustration of the working of the new "orthochromatic" plates. We expect to keep the *Year Book* within our reach during the next twelve months, for we shall not be able to exhaust it sooner.

The British Journal Photographic Almanac for 1885, edited by W. B. Bolton, also arrived too late for more than a passing notice in our last issue. As usual, it is filled with good things photographic. With over one hundred and fifty contributors, and these amongst the stars of first magnitude in the photographic galaxy, who would not want to wander through its pages and taste of the good things presented there? The editor contributes an interesting article upon the year's progress, and another upon alkaline development. M. J. W. Swan talks about the use of the electric light for photography. Col. Stuart Wortley contributes an article upon "Drying Gelatine Plates." We also have articles on plates and emulsions, from A. L. Henderson, the Rev. B. Holland, Lyddell Sawyer, W. Robinson, Jr., William Brooks, and a number of others. There are also articles on photographic apparatus, astronomical photography, lantern slides, enlargements, mounting, lenses, printing, paper negatives, submarine photography, micro-photographs, and a host of other topics too numerous to mention here. We consider the *Almanac* an indispensable adjunct to every photographer's library.

Crayon Portraits on Solar Prints, by E. Long, of Quincy, Ill., is a very clear and concise statement of this delightful phase of art work. We know of nothing more pleasant than this kind of crayon study, more especially for those who have had little or no instruction in drawing. In the little volume before us, we have chapters upon the materials and tools, preparation of materials, outlines, shading, background, and all other points necessary to produce good portraits in crayon. Of course, a knowledge of drawing is a great help in this work, but very good results are obtained by those who have had no such instruction, and these will find much useful information in the pages before us.

BOOKS WANTED.—The BULLETIN is anxious to obtain the following numbers of the London *Photographic News:* April 21, 1881; May 26, 1882; October 10, 1884. Can any of our friends tell us where to get them.

WE recently visited Dr. L. H. Luady, of the School of Mines, Columbia College, and saw some very simple and effective apparatus, with which he is making experiments upon the speed of drop shutters. He has very kindly promised to give us a paper describing. his method of working, and also some drawings of the apparatus. It is very carefully designed, and is a model of simplicity in manipulation. We are sure our subscribers will be interested in this work.

OUR ILLUSTRATION.

WE invited Mr. Newton to consent to sit for a portrait to illustrate our journal. After some persuasion he kindly consented to go to his friend, Abraham Bogardus. We told Mr. Bogardus that we should like him to use Eastman special plates, and the plates used were some that had been returned by a well-known photograper as being unfit for use. Six of these plates were used from the dozen returned, making twelve negatives, all of which were used to illustrate this number of the BULLETIN. The result speaks for itself; photographers will recognize the excellent quality of the work.

Views Caught with the Drop Shutter.

THE satisfaction that the BULLETIN gives in consequence of its new departure is evidenced not only by the flattering letters received, but by the *solid tokens in the way of subscriptions*, the receipts in this direction being exceedingly flattering.

REPORTS of the meetings of the Operative Photographers, the Photographic Section of the American Institute, and the Rochester Photographic Association, are unavoidably left over for our next issue.

THERE are quite a number of additions to our picture gallery; but we are compelled to leave them unnoticed in this issue from lack of space to do them justice.

MOST people know that "Pense" is nothing more than the name for a certain *color*, but that there are some who do not, is shown by the fact that parties sometimes order as follows:

1 Ream *Pense* Paper, ½ *Pink*, ½ *White*. We notice, also, that some parties advertise "The original pense," thus going back pretty nearly to the time, when "the earth was without form and void."

MARCUS & CUNNINGHAM, photographic merchants, Montreal, Canada, are the successors of Ewing and Cunningham.

WE regret to note that the M. A. Seed Dry Plate Co.'s factory was entirely destroyed by fire on January 17th.

The Amateur Photographic Association of Victoria.—This association is progressing rapidly, and has proved a great boon to amateurs in the colony, as well as to several of its members in the adjoining colony of New South Wales. At the last monthly meeting, held October 6th, a paper was read by Sergeant Fenton, on *The Preparation and Purification of Photographic Chemicals*. The reader of the paper is well known in Victoria as an efficient amateur chemist.—*British Jour. Photog.*

AN amateur photographer, who had a slight acquaintance with languages, gave a dinner, and, being tired of seeing bills of fare in French, got one up in a little more classical style.

The following was his statement of the first course:

"Mulierés clamosæ bacca ostrea epidemica."

If any of our subscribers can decipher what he had in mind, we will mention the second course, which is worse.

THE mannfacturers of dry plates held their annual meeting on Feb. 10th, at the Metropolitan Hotel, New York City, and were represented by John Carbutt, of Philadelphia; G. Cramer, of St. Louis; Geo. Eastman and W. H. Walker, of the Eastman Dry Plate and Film Co.; Mr. Munroe, of the Munroe Dry Plate Co.; Mr. Blair of the Blair Tourograph Co., of Boston, and others. They reduced the price of dry plates about twenty per cent. from present prices.

What Our Friends Would Like to Know.

Q.—U. E. U. writes: "I bought a lot of ready sensitized albumen paper, and with it was 'supplemental instructions' by the late Mr. H. T. Anthony, and over these I am puzzled. Is it meant that the prints shall be placed in a solution of either of the salts named while it is of the strength of 30 grains to the ounce of water, or that the 30-grain solution shall be diluted with a certain amount of water, just as solution B is used?"

A.—The directions should be followed just as they are printed. If you will make a calculation, you will find that the 30-grain solution mentioned is not very strong, and needs no dilution. It is better to soak the prints in clean water first, before putting in the acetate bath.

Q.—R. E. writes: "Will you please to answer these questions in the next BULLETIN? I bought albumen paper, silvered it exactly as printed in circular, and fumed thirty minutes. When I put it into the reddening bath, one ounce acetic acid to sixteen of water, some of it turned red in ten minutes, but most of it would not get red in half an hour, and with more acid. After washing well, I put them into the toning bath, water, 8 ounces; gold solution, 1 ounce; made alkaline with carb. soda. They would not tone, even the red ones would not become purplish black, but remained red. I added more gold, and also heated the bath, but to no purpose. I put them into the hypo. and they turned more red, with an additional tinge of yellow. The paper printed fine blue-black, and I don't recollect ever getting a black before when I have printed. Help me out."

A.—In regard to the red color you complain of, it looks very much like hypo. in your acid bath and also in your toning bath. Are you sure you used clean water? We think, from the look of the prints, that your difficulty must be hypo.; the paper is very largely used, and this is the first complaint of this kind that we have seen. Use one dram of acetic acid in the first bath instead of one ounce, and then *wash well* before putting in the toning bath, and we think you will be all right. Be careful about the water.

Q.—C. G. H. writes: "I would like to get some information about carbon pictures. Are they very expensive to make? Is it a difficult process? Can a man of ordinary intelligence make them?"

A.—If you are a professional photographer you will need a license to use the carbon process. If you are an amateur, such license will cost you nothing. Mr. Lambert is the agent for all the carbon process patents. Books of instruction are sold telling how to work the method, and these, with the necessary materials can be obtained from E. & H. T. Anthony & Co. We shall publish some new directions by Dr. Stolze soon.

Q.—W. B. P. writes: "I write to you, wishing to know the meaning of "methylated alcohol," as used in Mr. Edward's alkaline developer?"

A.—"Methylated alcohol" is a name used in England, and is applied to a mixture of ninety parts of alcohol and ten parts of wood spirit. The wood spirit is added to prevent the alcohol being used for drinking purposes. No such mixture is used in the United States; at least it is not a commercial article.

Q.—H. E. A. writes: "I have much trouble with a greenish film on my negatives where the glass should be clear. What must I do to get rid of it? I cannot obtain new negatives, and would very much like to improve those I have."

A.—Place the negatives in a solution of bromide of copper from five to thirty seconds, according to the amount of stain. Then wash well and place in the hypo. Another method is to flow with solution of iodine, wash and fix.

Q.—Mrs. A. W. J. says: "I have some very choice views taken on 4 by 5 plates of places around Delaware Water Gap, and in some of the scenes of waterfalls, the negatives are very thin in the parts near the water, and the prints do not show the beautiful structure of the rocks that makes the falls so pretty. Is there anything I can do to such negatives to bring out these features?

A.—Reduce the denser parts of the negatives by treating with a solution of iodine applied with the camel-hair brush; wash and fix in hypo.; this will make the negative thinner, and by printing in diffused light the weak parts can be brought out with the others.

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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Vol. XVI. SATURDAY, FEBRUARY 28, 1885. No. 4.

COLOR PHOTOGRAPHY.

"*One day a photographic picture will be produced such as one sees in a looking-glass.*"

The above words express the conviction of one of the earliest workers in the art of photography. They were used in a conversation between Nicephore Niepcé and the Marquis de Jauffroy. And yet how little has been done in this line of investigation since that time. Those who have done any work in this direction can be counted upon the fingers of one hand, and the latest researches we have been able to find are twenty-five years old.

Little or nothing was done on this subject until after the invention of the daguerreotype, when two men only appear to have produced anything that approaches to the realization of the art of photography in colors. These were Edmond Becquerel and Niepcé de St. Victor, the nephew of the Father of the Daguerreotype.

The work of Edmond Becquerel is described in the *Compte Rendu* for 1849, where a communication is given by M.M. Chevreul and Regnault. Dr. F. Crace Calvert, in one of his Cantor Lectures to the Society of Arts, mentions these researches of Becquerel: "He took a daguerreotype plate, or a silver-plated one, and having dipped it in a weak solution of chlorine, or, what was still better, a weak solution of hydrochloric acid, by connecting it with the poles of a galvanic battery, the brilliant silver surface acquired different tints, passing gradually from an opaque white to a black tint." The tint which gave the best results was a pearlish white. When this plate was exposed in a camera to the colors of the spectrum, they were impressed upon it, but only faintly. By heating the plate before placing it in the camera he remedied this defect of faintness. He also found that the same effect was produced by exposing the chlorodized plate to the sun under paper steeped in an acid solution of sulphate of quinine, instead of heating it. Under the quinine the plate acquired a white tint, resembling that of paper. In spite of many efforts on the part of M. Becquerel, he failed entirely to fix the colors he obtained; they faded immediately when exposed to the direct rays of the sun.

In the same lecture Dr. Calvert also speaks of the work of Niepcé de St. Victor, and says that his results surpassed those of Becquerel in the brilliancy of the colors obtained. Niepcé de St. Victor succeeded in producing the colors of fabrics, flowers, and, what was more remarkable, black and yellow tints which had resisted all previous attempts. Dr. Calvert tells us that he saw a photograph of a doll dressed in colored fabrics, in which the minute ornaments could be traced, and the iridescent colors of a peacock's feather. These pictures would bear diffused light for several days. To obtain these results Niepcé de St. Victor took a daguerreotype or a silver-coated plate, and dipped it in a solution of sodium hypochlorite of a specific gravity of 1.35 until it became of a bright pink hue. He then covered it with a solution of dextrine saturated with lead chloride, and dried it. It was afterward heated like Becquerel's plate, or exposed to the sun under a screen of sulphate of quinine. After exposure in a camera to the colors of the spectrum or colored objects, the stability of the colors was increased by coating the plate with an alcoholic solution of gum benzoin.

Niepcé de St. Victor, during his researches in color photography, made two observations that are important. He found that he could reproduce the binary colors—orange, violet, indigo, and green, if those colors were natural; but if they are produced by the mixing of two primary colors, he could only produce one of them. Thus he could reproduce Scheele's green, but not green composed of a mixture of chrome yellow and prussian blue, the blue alone reappearing on the plate. His other observation was that if the plates used were dipped into alcoholic solutions of salts that impart color to flames, these flame-colors are reproduced upon the plates.

Like the pictures of Becquerel, those of Niepce de St. Victor were also evanescent, and no method has been found to fix them. They appear to have been developed with ammonia, by sponging the surface with the solution until the colors appeared.

Previous to these attempts at color photography Sir John Herschel, in 1838, had made some observations upon the varied colors assumed by silver chloride when exposed to sunlight, but little came of his observations beyond the recording of them. Dr. Robert Hunt, the editor of Ure's "Dictionary of Arts and Manufactures," also made similar observations, but without any practical application in this field of investigation.

Dr. S. Irenæus Prime, while engaged on the life of Prof. Morse, came across some correspondence between the latter and a man in Greene County, New York, who claimed to have discovered the ways and means of taking photographs in color. He was very secret in his experiments, but he submitted the results to Prof. Morse; and the specimens were such as to convince him that the man was on the road to success. These experiments evidently bore little fruit, for a man of Prof. Morse's quick insight as to the value of inventions would surely have urged the experimenter on to success had it been attainable.

Henry Fox Talbot claimed to have reproduced the colors of glass paintings by placing them in contact with silver chloride, but his experiments also were barren of results of permanent value.

Alphonse Poitevin increased the sensitiveness of silver chloride to colors, by treating it with a mixture of saturated solution of bichromate of potash, a saturated solution of sulphate of copper, and a five per cent. solution of chloride of potassium, in equal parts. St. Florient claimed to have improved the Poitevin process.

In all these researches it has been impossible to fix the colors permanently upon the plate. Will the colors ever be made permanent? At some future time we will discuss some of the evidence given by authorities on this question.

MEASURING THE SENSITIVENESS OF PHOTOGRAPHIC DRY PLATES.

To measure the sensitiveness of the various brands of dry plates many photographers, professional and amateur, are exercising much ingenuity and diligence. The purpose is indeed a laudable one; the methods of attaining it, unfortunately, leave much to be desired. Accurate results are only obtained by using accurate methods, and as yet the results are, from the very nature of the case, of no more importance than the expressed opinions of photographers who report after a few tests or after trials of the working of a small number of different plates.

To measure the comparative sensitiveness of plates, one must have some accurate standard for measuring light, otherwise no trustworthy data can be obtained. It is unnecessary to say that no such standard exists. Even more than this, an accurate method of measuring sunlight must be found, for if the plates are tested as to their rapidity in reference to light from any other source, the results arrived at are of no more importance to the practical photographer, be he amateur or professional, than would be an essay on the constitutional or graphic *formulæ* of photographic chemicals. The report of the conclusions arrived at might possibly be interesting reading, but if it were reported that A's plates were three times quicker than B's, when tested with the unit lamp or the magnesium light or the standard candle, no one could safely conclude that A's plates were to be chosen for everyday work when rapidity was desired. The fact is, there would be great reason to believe that in sunlight B's plates would very likely be the best. This is evident from the different behavior of the iodides, bromides and chlorides when acted upon by lights from different sources.

In a recent article by Pickering * this subject is well stated. He meets the question fairly and endeavors to measure the sensitiveness of plates, when acted upon by sunlight, thus searching for data that will be of practical value. Unfortunately his table of absolute sensitiveness itself shows that his method is faulty, for the gradations between plates according to it are too sudden and marked to be accurate. One who has used the various brands needs no experiment to convince him that this is so. One source of error is the developer used, since the oxalate developer is not equally well adapted to all plates and this will account for the low position in the table of some brands. This the writer himself calls attention to as influencing the final result. But, however, the great source of error was in the employment of superimposed strips of paper, a faulty method which was pointed out in this journal† in an abstract from the *Moniteur de la Photographie.* When a certain number of sheets of paper are superimposed, the light transmitted bears no ratio to the number of sheets which it must traverse. This fact will account for the sudden variations noticed in the table. The only conclusion possible, under the present circumstances, is, that first some accurate method of measuring sunlight must be found; then and not until then shall we know anything of value concerning the sensitiveness of dry plates to the action of sunlight, which is really almost the only light that interests the practical photographer.

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* Phila. Photographer, February, 1885, p. 37.

† Anthony's Bulletin for Dec., 1884, p. 589, for Nov. 15, 1884, pp. 170 and 171.

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THE BULLETIN is the best periodical of its kind I have yet had the pleasure of reading, and it cannot help but be a great help to all artists. I wish you abundant success.

Yours, W. PEMBERTON.

DAGUERRE.

BY L. H. LAUDY, PH. D.

(*Continued.*)

IMMEDIATELY after the news of the process arrived in America, the various journals, scientific and otherwise, devoted considerable space to the discussion of its merits. In the *American Journal of Science and Arts** for 1839 we have the following: "Publick attention has been called of late to a mode of drawing *said to have been invented* at Paris by M. Daguerre, and by which he fixes upon a metallic plate the lights and shadows of a landscape solely by the action of solar light."

Speaking of the method of Mr. Talbot in the same article, it is claimed that his system is greatly superior to that of Daguerre, since it would be scarcely possible for a traveler to burden himself with metallic plates, which in Talbot's process are not required.

In the same volume of the same journal is found an article on "Perfection of Art, as stated in Notes on Daguerreotype Photography," by Sir John Robinson. The author says: "Circumstances led to my being included in a small party of English gentlemen who were lately invited to visit the studio of M. Daguerre to see the results of his discovery. I satisfied myself that the pictures produced by his process have no resemblance to anything, as far as I know, that has yet been produced in this country. Excepting the absence of color, they are perfect images as seen by reflection from a highly polished surface. The subjects which I saw were views of streets, boulevards and buildings; vacillating objects made indistinct pictures. There can be no doubt that when the daguerreotype process is known to the public, it will be immediately applied to numberless useful processes; and even the fine arts will gain, for the eye, accustomed to the accuracy of the Daguerre pictures, will no longer be satisfied with bad drawing, however splendidly it may be colored."

On page 374, of the same volume, is a notice of an article in the *London Globe*, August 23d, on "Solar Printing," which says: "The barbarous term, 'daguerreotype,' invented to commemorate M. Daguerre, the discoverer of the improved method of copying by means of the sun's light, denotes the instrument by which these results are obtained. M. Arago has recently revealed the secret to the French Academy at Paris." The writer then describes the process, and curiously states that the plate must be exposed to mercury at an angle of forty-eight degrees. "Three highly curious drawings obtained by Daguerre were exhibited. One was the Pont Marie, another M. Daguerre's Atelier, and a third was a room containing a rich carpeting, the minute threads of which were presented mathematically correct." A note by the editor states that "a professional gentleman in New York informed us before the arrival of the *British Queen* (which brought the first printed account of M. Arago's disclosure), that he was in possession of the secret, and, in connection with an eminent chemist in New York, had already obtained beautiful results, but was not able fully to arrest them."

In all these writings it will be observed that Arago seems determined to convince people that he is the one that the honor of the discovery should be awarded to, when, in fact, all he did was to read the announcement of the process to the French Academy. In fact, I can find no record of his having made a daguerreotype. A similar episode occurs in the relations of Prof. Morse and Dr. Draper. After Morse obtained all the ideas and information from Dr. Draper, he deserted his palette and easel and started the first gallery for making daguerreotypes on the top floor of the New York University. Prof. Morse tried to sell what he had gained from Dr. Draper, and had kept a profound secret, to Dr. F. A. P. Barnard, for fifty dollars—at that time a large sum of money, when we consider that Daguerre had published the whole process.

**American Journal of Science and Arts*, Vol. XXXVII., pp. 169–173.

All claims that he made as the discoverer of the daguerreotype process vanish as soon as the history of it is revealed, and whatever improvement he introduced was in conjunction with Dr. Draper.

In a paper on "The Daguerreotype and its Application," by W. H. Goode,* the following notes on the method then used are of interest: All the manipulations were learned from the printed accounts of the process. The largest pcitures taken were six by eight inches with a French achromatic lens. A common spectacle lens of long focus, adjusted in a segar-box, served as a camera in some cases, and was fitted with a diaphragm in front. The iodine boxes were deep and heavy and were made in France; the writer of the article suggests the use of shallow dishes. The mercurializing apparatus was a simple large capsule in which the mercury was heated. Most, if not all, the modifications of the daguerreotype apparatus were first effected by Dr. Draper. Plates used in the process were either of American manufacture or were imported from France. The American plates were exceedingly imperfect. A method of Mr. Garlich of plating on brass and copper was suggested as a remedy for this imperfect manufacture. A piece of copper was polished and cleaned, and then placed in a weak solution of silver nitrate. The silver is slowly deposited and is gently rubbed in one direction with moistened bitartarate of potash; lastly, the plate receives a fine polish with an oxide of iron buff. The author mentions that a process has been employed in France which changes the color and removes the unpleasant reflection from the surface—neutral chloride of gold being the agent used. He also states that freckles and hairs are copied on the daguerreotype plate with microscopic accuracy. He says: "I have taken proofs of microscopic objects magnified six hundred diameters, by the solar microscope on the iodized surface," and finally the writer remarks that the attempts which have hitherto been made to transfer the picture to paper have not been successful.

This will give an idea of the state of the photographic art only forty years ago. Perhaps a few notes about the early life of Daguerre will not be uninteresting.

Louis Jacques Mande Daguerre was born at Cormeilles in the Department of Seine-et-Oise, in the year 1789. He was first occupied as an inland revenue officer at Petit-Brie-sur-Marne, near Paris, but soon took to scene-painting for the opera, in which he was eminently successful. Among the most admirable of his productions were the "Chapel of Glenthorn," at the Ambigu, and the "Rising of the Sun," in "Les Mexicains." He assisted M. Prevost in the execution of panoramic views of Rome, Naples, London, Jerusalem and Athens, and subsequently, with Bouton, he opened the Diorama at Paris; this latter was afterwards exhibited in London. On June 15th, 1839, he was made an officer of the Legion of Honor by the French Government for his discovery of the daguerreotype. And on the same day he was also awarded a pension of 6,000 francs, and his partner Niepcé, received 4,000 francs as a pension.

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* *Amer. Jour. Sci. and Arts, Vol. XL, p. 137.*

Dr. Daniel Draper, of New York, has still in his possession some of his father's early daguerreotypes which he kindly allowed the author to examine. They are mostly taken from microscopic objects, enlarged 20 to 500 diameters, and were used by Dr. John W. Draper to make wood-cuts to illustrate his work on "Human Physiology," in 1856. They have a double interest in that they were the first practical application of daguerreotype, and certainly the first photo-micrographs; and when we consider the imperfect microscope objectives of that time, it is wonderful that these results were obtained. Had it not been for the use of the ammonio-copper cell, by Dr. Draper, they could never have been produced. These same daguerreotypes were copied and enlarged by Dr. Woodward with the negative process, and the negatives are in the collection at Washington.

The first portrait taken by Dr. Draper was presented to Sir David Brewster, and is in his collection in England.

Nearly all the daguerreotypes of Dr. Draper, together with his apparatus, were destroyed by fire in the burning of his laboratory at the New York Medical College.

An account of his early experiments, written by himself, is to be found in his "Scientific Memoirs," published in 1878.

Daguerre died July 12th, 1851.

The following list of references upon Daguerre and his work may be of interest to those who care to look further into this subject:

"Comte Rendu," 1839; Tome IX.

"Poggendorff Annalen," 1839; vol. XLVIII, page 193.

"American Journal of Science and Arts," vol. XXXVIII, 1839; pages 183, and 374. vol. XL, 1841; page 137.

"Encyclopedia Brittanica," vol. VI, page 761.

"Proceedings of Royal Society," Jan. 31, 1839.

"Philosophical Journal," vol. XVI, page 535. vol. XVII, page 217. vol. XLIII, page 185 and page 75. vol. XXXVIII, page 97.

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PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

To the Editors of the BULLETIN:

In the February number of the *Philadelphia Photographer* is a letter written by T. H. Blair, addressed to the members of the P. A. of A., sharply criticising the actions of some of the officers of the Cincinnati Convention.

From what I can learn of the manner in which the business was transacted by some of the officers last year, Mr. Blair has just cause to make complaint, and no one feels more keenly the dark cloud that hangs over the Association, caused by the follies of the year just past, than do the officers upon whom the responsibilities of the coming Convention depend, and none have worked more faithfully to prevent a repetition of those objectionable features than the Executive Committee who met in this city the twelfth of last month.

So far as I am personally concerned, I know but little of the past history of the Association or its manner of doing business, as no books, papers or records of any description have come into my hands from my predecessor.

But there will be a record of the Convention of "'85" that the officers will not be ashamed to turn over to their successors, and that record will contain all their business transactions during ing their term of office.

PLAN.

Instead of asking for contributions from the different manufacturers, dealers, etc., we have adopted a plan founded on business principles.

I presented to the Executive Committee a diagram of the hall where the Convention will be held. In it we have found about twenty thousand square feet reserved for exhibitors of photographic goods of every description. By charging ten and fifteen cents per square foot, according to locality, an amount will be realized which, in addition to dues, will probably pay all necessary expenses. No one can reasonably find fault, as every one will be on an equal footing, and a few will not be paying the whole expense of the Convention, while others, who pay very small amounts, have the same privileges and the same room for exhibits.

I will guarantee that any man who sends me an order for five hundred or a thousand feet will receive a copy of the diagram of the hall and his space marked on it, and the same will also be reserved on the original plan which I will keep.

When that man comes to the hall to look for his space promised, he will not find it occupied by another.

A number who have become familiar with our manner of carrying on the coming Convention have ordered space, some taking over one thousand feet.

It will be well for those who contemplate an exhibit, to apply for space as early as possible, as there is a good prospect of its being rapidly taken.

Every Photographer expecting to visit the Sixth Annual Convention, will know beforehand how he will be entertained during his stay.

The business meetings, and those for the discussion of photographic subjects, reading of papers, &c., will be separate from one another.

On the first afternoon, there will be papers read and a discussion on practical photography. The evening of the same day will be devoted to an exhibition of lighting and posing by artificial light. All arrangements have been made, and subjects secured, as well as parties capable of managing them.

This will be done without any expense to the Association.

On the afternoon of the second day, a question box will be provided, and any who wish to ask questions on the subject of photography can do so. Five minutes only will be allowed for answering such questions.

On the afternoon of the third day, there will be an excursion to Niagara Falls, where the Photographers of America can sit together for their picture, with the grandest background on earth. In the evening the great fall will be seen lighted by electric light and showing all the colors of the rainbow.

The afternoon of the fourth day will be devoted to the discussion of prices, and in the evening there will be a grand reception for the public.

Saturday, being the last day, will be devoted to the closing up of business.

All of this will be carried out, as we have been promised papers from some of the most scientific photographers in the world, whose names will be published in due time.

In addition to this, we are promised large exhibits from some of the most eminent photographers of New York, including Sarony, Mora, Anderson and others, who have already engaged space.

I have no doubt but Boston, Philadelphia, Chicago, Cincinnati, St. Louis and their sister cities will contribute liberally, as they have done in the past.

A committee has also been appointed to solicit exhibits from Europe, and the Convention will present a collection of artistic work, both from the old world and the new, never before seen at one time.

The Photographer who does not embrace the opportunity of attending this meeting will always regret it.

Yours fraternally,
H. McMichael,
Secretary.
Buffalo, N. Y., Feb., 1885.

PARAGRAPHIC PENCILINGS.

BY G. H. LOOMIS.

Absence from my post may serve as a reason for not offering, in generous measure, my congratulations on the newly dressed Bulletin.

In design and execution it is highly unique and artistic, and adds attractiveness to the round table. Not only in its external appearance, but also within, are the indications of merit which will no doubt find encouragement and appreciation on the part of those who are to receive its semi-monthly visitations.

We feel quite well introduced to its editorial head by the illustration in the first number, and a long acquaintance with the publishers assures us that nothing on their part will be omitted to make the forward step a success. Presuming an increased patronage will reward the enterprise, we have only to renew our congratulations to all interested parties.

I am able to chronicle but little in the way of gallery gossip just at this time.

We learn that Messrs. Ritz & Hastings dissolved their business relations last month—Mr. Ritz retiring, but not for long, we presume, as he is too irrepressible to remain many days from under the skylight; Mr. Hastings remains sole proprietor, we believe, and will find lively exercise in attending to the thriving business built up during the past three years. We wish him abundant success.

I had forgotten, until receiving the second issue of the Bulletin, to note the death of Mr. Geo. K. Warren, and it is not needful that I add to the brief obituary printed. I may say, however, that Mr. Warren was quite early in the field as a practical photographer; exhibited pluck and enterprise in developing the art, kept pace with its rapid improvement, acquired a large business, more especially in the line of celebrities, and, but for the want of judicious balance and foresight in financial management, would have acquired and possessed a competence. Our friend made some serious mistakes, and to none were they more painfully apparent than to himself when he contemplated his missed opportunities. "To err is human, to forgive divine."

The itinerant sample exhibitor is still on his travels. His specimen book has its allurements, and now and then a fish is taken. One of the recent dodges heard of is quite characteristic as exhibiting the tricks of the tricksters.

One club agent sells a lady a ticket, providing the bearer with a dozen excellent cabinets for $3.00, payment at time of sitting. Another agent on his track shows his *super-excellent* specimens, and induces the lady in question to change her order, taking his ticket in exchange for the other; and so they travel on, seeking whom they may devour. The club business is getting soiled, and so are those of our better class of artists who lend themselves for unhealthy competition. It has a recoiling effect.

The annual meeting of the Photographic Association of Boston and vicinity occurred on the 2nd inst. It was a limited rally of the membership, and, except in the election of officers, nothing noteworthy was transacted. To the following official board is committed the fortunes or misfortunes of the Association for the year ensuing:

President, Fred. C. Low, Cambridge; *Vice-President*, Augustus Story, Boston; *Secretary*, H. W. Whiting, Cambridge; *Treasurer*, John Stalker, Boston; *Executive Committee*, A. T. Bussell, E. J. Foss and D. T. Burrell.

We have only space to add that the metropolis of New England ought to have a sufficient number of live photographers to sustain a first-class organization. Evidently something is the matter, we may venture an opinion.

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A POSTAL PHOTOGRAPHIC CLUB.

To the Editors of the BULLETIN:

DEAR SIRS—In my connection with the Society of Amateur Photographers of New York, I have had some little correspondence in regard to its aims and scope with amateurs in various parts of the country, many of whom are unable, by reason of their location in remote and small places, to enjoy the benefits of membership in a society. I feel sure that this is felt to be a hardship by many, and in the hope that the plan here set forth (which is modeled on that of a successful English society), will secure the co-operation of such, I herewith propose

THE POSTAL PHOTOGRAPHIC CLUB.

Prospectus:

This Club is proposed for the purpose of affording instruction and information in the science and art of Photography to amateurs residing in different parts of this country, through the medium of the postal service.

These objects are to be attained by:

First.—The circulation of albums of photographic prints contributed by members, and accompanied by notebooks for remarks, queries, information on photographic matters, &c.

An album to be despatched each month, every alternate one being devoted to some special subject announced beforehand; the remainder filled with general subjects. Two prizes are to be given in each album, the members themselves acting as judges.

Second.—The members comparing and criticising each other's productions, both as regards artistic and technical qualities, having full particulars before them of the conditions and details employed to produce each picture.

Third.—The exchange of photographs, and imparting information of various processes to each other when desired.

The entrance fee to be, say 50 cents, and the annual dues $2.00.

The prizes to be in cash, and perhaps $2.00 and $1.00 in amount.

There are manifest advantages in such a system, both for societies—enabling them to compare the work of their members with that of other societies—and for individuals; but it is not intended to enlarge upon these points at this time, but simply to bring the matter to the attention of your numerous readers, in order to ascertain if such an organization will be favorably received, and to ask all who will interest themselves in it to address you and myself, and if the response is sufficiently favorable, further steps will be taken.

Very truly yours,

C. W. CANFIELD,

Sec. Society of Amateur Photographers of N. Y.

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LANDSCAPE PHOTOGRAPHY.

BY MR. PETER MAWDSLEY.

Paper read before the Rochester Photographic Association.

First—"Selection of View."—The foreground really constituting the picture, it is important that its details should be given due prominence on the plate. Mid-distance and distance are insufficient of themselves to form a pleasing picture, but judiciously combined, with foreground and accessory to it, will give an artistic whole which will always gratify the eye. Horizontal lines should be avoided; when such occur, the camera should be moved to right or left, and when that is not convenient, the objectionable feature should be hidden or broken up by the introduction of any movable object which may assist to do so. A branch of a tree or brushwood are generally within reach. I have found a wheelbarrow, horse and cart, or one or more figures suitably placed, do good service. In photographing buildings, never be satisfied with a mere front elevation, but see that it goes off in perspective, and in such cases particularly avoid an unbroken expanse of lawn or grass land. A few garden implements, lawn-mower, etc., will be a great service.

Second—" Lighting."—Where possible I should prefer to have the light from over right or left shoulder, as the cast shadows give great crispness and brilliancy. Never photograph with the sun directly behind you, as the result would be excessively flat—all light and no shadow, at least visible. Whilst in pure landscape the above rules will generally hold good, in seascapes, on the other hand, I should prefer to have the lighting obliquely from the front, as, owing to the large volume of reflected light, the shadows would be well illuminated and the reflections most brilliant. A first-class ship under full sail, taken under such conditions, would be a charming object. What I have said relative to seascapes will generally apply to photographing snow and ice.

Third—" Lenses."—For pure landscape and seascape there are none better than the old mimscus view lens, the only objection being its bulk, which is very great as compared with modern compound forms. It is preferable to include only a small angle of view, and to do this a lens having a focus half as long again as the base line of the picture should be used; foreground and distance will be in harmony, whereas, if a wide angle lens is used, the foreground will appear unduly magnified and the distance dwarfed. This characteristic, when the background is formed by a lofty range of mountains, is particularly objectionable. Most compound lenses are so constructed as to admit of the front combination being used alone, and as this will approximately double the focus, a smaller angle of view will be included.

Fourth—" Development."—In subjects from which the lighting or other conditions are wanting in contrast, a strong developer, which quickly brings printing density, will strengthen the high-lights and deepen the shadows; on the other hand, with subjects largely and deeply in shadow, by using a minimum of the developer largely diluted, say with two, three or more volumes of water, giving time and patience to the operation, will result in a negative the high lights of which are not unduly dense, and an amount of vigorous detail will be secured in the shadows, which no other development (so far as my experience goes) will give.

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A USEFUL HINT.

Brock & Co., of Ontario, send us a very simple and effective way of treating negatives, stained by long development or too strong pyro. They say that it is better and quicker than alum and citric acid, and does not weaken the negative. After the negative has been fixed and washed for two or three minutes, flow over it a sufficient quantity of wet plate developer to flow evenly, twenty strong. You can stop where you like; it gives the negative nearly a wet plate tint, and prints nicely.

OUR PICTURE GALLERY.

Mr. J. W. Bruce, of Brooklyn, sends us a very fine view of the members of the Long Island Bicycle Club. The view is taken in front of an arch in Prospect Park, and the graceful grouping of the men and their wheels is very artistically managed, so that the stone work of the bridge makes a background of uncommon beauty. The plate is 16 by 20, taken with a Dallmeyer lens on an Eastman plate. The result is certainly excellent.

Another picture by Mr. Bruce is an instantaneous view of the start for a horse-race at Sheepshead Bay, which is quite good.

One of the best pieces of machine photography we have seen for a long time is a print, 13 by 29 inches, of one of the locomotives of the New York, West Shore and Buffalo Railroad, taken by Mr. J. W. Reid, of Patterson, at the Rogers Locomotive Works. Of this class of work we think it would be difficult to find a better specimen.

From Mr. N. S. Davis, of Somerset, Mass., we have received a print of a full-blown flower of the Night Blooming Cirius, grown and photographed by the donor. When we consider the fact that this picture was necessarily taken at night, the result must be pronounced uncommonly good.

Mr. Ottomar Anschültz, of Lissa, Posen, in Germany, sends us quite a number of artist studies of animal life. Mr. Anschültz, being an artist, has obtained some very picturesque views of deer and other animals by means of instantaneous photography. Some views of storks in various positions are particularly sharp and clear. As examples of photographic art these pictures are first-class and very artistic.

Three imperial cards from Mr. Stephenson, of Ypsilanti, Michigan, are very good examples of photographic work of this character; but to our taste the printing is a little too dark to show the work to the best advantage; this remark is more especially true of the gentleman and lady—the young girl is about right in this regard.

DEVELOPING TRANSPARENCIES WITH PYRO.

BY THOMAS PRAY, JR.

In the Bulletin of January 24th I have just noticed on page 60, "Views From Abroad"—H. W. Macdona's developer for transparencies. This is nothing more or less than what was given to us by Mr. Genlain in the *British Journal of Photography* some months ago, with a little modification. I have tested Genlain's developer with a number of variations on a well made plate. It will work without any trouble; but allow me to suggest from my own experience, not from any theory, that if you take 1½ oz. of carbonate of soda (common washing soda or sal soda of the shops, after it has been exposed to the air and whitened), and one oz. of sulphite of soda and 25 grains of bromide of ammonium (which I always prefer instead of potassium); put this into 24 ozs. of water, allow it to thoroughly dissolve, then filter; you will have a solution which will keep. Now make a solution of pure pyrogallic acid; eight grains to the oz. of water, into which put four grains of salicylic acid, dissolved in the least possible quantity of alcohol. You have now a first-class developer which will keep for six months perfectly clear. Having exposed your plate, the ordinary 3¼ x 4 or 3¼ x 4¼, a little less time than you would expose for ferrous oxalate, use one grain of pyro in solution or one dram of the pyro. solution for each oz. of the soda solution, mixing them before you flood the plate. As soon as the first traces of the image in the shadows becomes visible, immediately dilute this with from ¼ to ½ the amount of water that you have solution—allow it to come up very slow, let it come out until all the detail is visible, but don't carry it much further than you would wish in a transparency. You are now all right, if you wash the plate thoroughly before putting it into the hypo., and if you are using Anthony's transparency plates, which have given me some splendid results. Take the ordinary strength of hypo. as generally advised, namely, one to five, and reduce it by adding half as much water as you have hypo. solution; and here is where many amateurs lose their transparencies—the hypo. is so strong that the foundation of the image is extracted with the white of the bromide. After the plate is put into the hypo. watch it, and only allow it to remain there until such time as the white bromide is all taken out; wash again carefully and then don't use the formula referred to above for the clearing solution if it is more than two or three days old. If so, you will most assuredly part with everything on the plate. Throw out the sulphate of iron, and you may immerse the plate for five or ten minutes to clear up what may have been slightly stained by the pyro. But if the sulphate of iron has been added, don't allow the transparency to remain in it more than one or two minutes, for it will clear as effectually as cyanide of potassium, one to six, and in nearly the same amount of time, if the sulphate of iron solution has been left for a week or two until it turns a bright greenish yellow. If you have dense sharp negatives, the best solution I have ever used for clearing is one oz. of chrome alum, dissolve in 40 ozs. of water, filter, and then add ½ dram of sulphuric acid C. P. This will not reduce the plate as the sulphate of iron solution will; and if there are any symptoms of frilling, as sometimes occur when the exposure is short and the development continues for some length of time, wash the plate after development and put it into the clearing solution for a minute; wash it, again into the hypo. wash again, into the clearing solution, and then wash for 15 minutes with the water running over it. My experience has been that in this way I obtained first-class results, without the length of exposure necessary for the oxalate to do its work well, and without the danger of staining the film, and from the lengthened exposure and weakened development to obtain absolutely clear glass. This transparency matter is perfectly simple and very easy, divested of the technicalities, and I frequently find my amateur friends have a great deal of trouble from not properly handling transparencies, owing to their not understanding that the slightest image, with the proper tone, gives the finest impression on the screen. These images require a certain amount of density, and I confess my preference for the pyro. developer, which I have used for months as above, over any oxalate developer that I have ever yet seen. If the amateur desires to experiment, after his developer is mixed, let him add to it five or six grains of gallic acid. He will obtain an approximation to a greenish black, which gives a beautiful appearance on the screen. By this method of pyro. development, and by using a piece of pot metal or imitation of porcelain over the negative if it be weak or indifferent, I have frequently succeeded quite to my satisfaction in obtaining very good transparencies, which were vastly improved over anything I could get with the oxalate developer. By changing the length of the exposure, slightly brownish or blackish tones can be obtained without any trouble.

THE HARVARD SOCIETY OF AMATEUR PHOTOGRAPHERS.

Many of the students at Harvard College have taken up amateur photography in one or another of its various branches; some use their newly acquired power as a help in their studies, while others, and by far the greater number, are content with a few pictures of their dormitories, their friends and their friends' rooms.

About two months ago several of the more enterprising students got together and formed a club. Its purposes were three-fold. First, and foremost, the hiring of a room, to be fitted up in a complete manner for use as a dark room. Second, the interchange of opinions on the various perplexing questions that are always arising. Third, sociability. This is put last because there are so many clubs at Harvard that it seemed almost needless to consider it at all.

The first want has been provided for as follows: The graduating class elects a photographer every year, whose business is to get at least one *good* negative of each member of the class, and also to take such groups as may present themselves. Prints from these negatives are then sold to members of the graduating class at reduced rates. Thus all are benefited; the students by getting good work cheap, and the photographer by the increase of custom.

This year Mr. Jas. Notman, of Boston, was chosen senior photographer, and he immediately fitted up a comfortable studio in Cambridge. He had one spare room, and this he lent to the society, and here they have fitted up their dark room. The dark room is small, being only nine feet by seven, but this is large enough to allow two to work at one time, and, after the cramped quarters that some of the members had been using, it seemed like a palace. It is fitted with a large sink, running water and a plentiful supply of shelves. There is also a large meeting-room some twenty-five or thirty feet square.

The officers of the society have the use of Mr. Notman's studio on certain days of the week, and with certain restrictions.

The question of lighting the dark room to suit all the members, was solved as follows: The window is covered with post-office paper, and there is a large Carbutt's lantern, with green glass.

Membership to the society is not confined exclusively to those connected with the University, but by the constitution it includes "such other persons as the society may see fit to elect."

The *President* is Mr. A. S. Johnson, who took the first prize for interiors at the exhibition of the Boston Society. The *Vice-President* is Mr. A. G. Webster, and the *Secretary and Treasurer* is Mr. Storrow.

The membership at present amounts to 24.

FOREIGN NOTES.

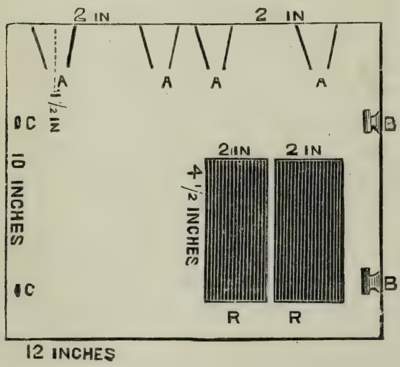
[From our London Correspondent.]

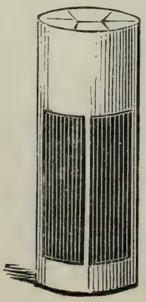
Photography Becoming Popular.—Since the advent of the gelatino-bromide process, amateur photography has become a very much more general amusement than formerly; the stained hands having been up to now the great deterrent with very many people. The usual thing is to commence with an outfit costing a very small sum—perhaps as low as $7.50. In about nine cases out of ten, the new-made amateur photographer spoils a few dozen quarter plates, and then hands the whole concern over to a younger brother, or to some friend who longs to try his hand. The tenth man, however, sticks more or less faithfully to photography, fits up a dark room in his house, buys a good outfit, reads the photographic journals, and becomes a member of the rapidly increasing community of photographic amateurs.

Even taking the above estimate, that only one recruit in ten sticks to his colors, there is an enormous increase to the ranks, new faces turning up so rapidly at the meetings of the photographic club and the various societies, that, on looking round, fully one-half appear to be strangers. Ladies take the camera with them on their walks, and boys at school dabble with the dry plates and the developer; while the fact of the weather being dull and foggy in no way dampens the energy of the new contingent. When the bright spring weather breaks in upon us, we may expect to see a regular epidemic of photography among those classes having some leisure on their hands.

About in proportion as things may appear active in the amateur world does business seem dull with the professional photographers? Perhaps it is that the public are satiated with the numerous photographs shown to them or given to them by their amateur friends. To tell the truth, the majority of the amateur-made pictures one sees nowadays are bad, decidedly bad, while the great part of the professional work is good, decidedly good. As a set-off against this, it may be remarked that the best of the amateur work is fully equal—perhaps superior—to the very best turned out by the professionals.

A Lantern for the Tourist.—Mr. T. G. Whaite described in a recent issue of the *Photographic News* a dark-room lamp suited to the needs of the traveler—one that will open out and lie flat like a sheet of card, and yet can be fixed for use in an instant.



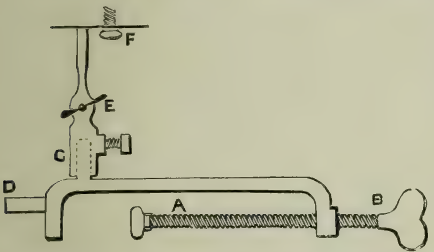


"Procure," says Mr. Whaite, "a piece of the thin brass sheeting used for making stencil-plates, and cut it out with scissors as per the above sketch. There are two openings, as indicated by the drawing, each being 4½ x 2 inches, the narrow strip between the two openings being for the purpose of preventing the colored medium from tightening across the opening and approaching too near the flame. Round these openings a number of small holes should be pierced; this can easily be done with a sewing-machine and a broken needle sharpened for the occasion. This will enable you to sew on the *outside* a covering of golden fabric, which should be of two thicknesses; if the ruby fabric is preferred, one thickness will be sufficient.

"At one end cut the brass as at B, and at the other end as at C, forming hooks and eyes to secure it when set up. The slits at the top are cut in the form of W and two V's; these are for the purpose of bending over, to prevent the light showing at the top; a child's night-light, or short wax candle, is then all that is required. There is no bottom to the lantern, and when standing on a table or shelf no escape of unsafe light; and I do not find it necessary to provide air-holes, the air finding its way in freely somehow. I have made these lamps of Willesden paper and thin cardboard; but the brass is so safe and durable, and can, with a silvering solution, be silvered inside, and thus form a good reflector. The cost is small, and occupies, when flattened out, no more space than a panel mount."

Chemically Pure Albumen.—There is no quality which one looks upon as being so eminently characteristic of albumen as that of being coagulated by heat, and yet M. Mihailoff has come to the conclusion that when absolutely pure, its aqueous solution is not coagulated by boiling. To obtain a solution of pure albumen, the white of an egg is precipitated by the addition of a considerable excess of a saturated solution of ammonium sulphate, followed by the addition of as much solid ammonium sulphate as the mixed liquids will dissolve. Under these circumstances the albumen is precipitated, and it is then thoroughly washed with a saturated solution of ammonium sulphate. The wet precipitate is now placed in a dialysis, and when the whole of the ammonium salt has diffused away a pure albumen remains in solution.

Beard's Camera Clip.—An excellent device for fixing the camera to post-fence or rail has been devised by Mr. Beard, an amateur, residing in London, and I expect that many of the photographic tourists of the coming season will prefer to take Mr. Beard's clip and risk finding a place to fix it, to being burdened all along their tour with the tripod stand. I allude of course to those who make photography a secondary consideration in connection with their tours. The clip is, I believe, not yet made for sale; it consists of a screw cramp B-A, which is of course made of metal. On this are two projecting pins C and D, upon either of which can be fitted the socket-piece F, E, C; this socket piece being provided with a hinged joint at E, and a table for the camera at F. It is surprising how many good localities for fixing the camera by means of the clip can be found. Let me mention a few examples: In a railway car on the window ledge, or, if one wishes the camera to be high, the clip may be attached to the top-rail, with the table hanging downward, so that one really works with the camera upside down. Similarly it can be in a road-carriage or omnibus, on an article of furniture, for taking a portrait, at the window of a hotel or on board ship. Another use is for copying, but in this connection let me quote the words of a correspondent of the *Photographic News*. He says:



"Fix the clip on the side of an upright post, and this will bring the face of the table in a vertical plane; the camera can then be screwed on so as to look downward, the special advantages of this mode of working being that writings or prints may be kept flat by weights or a slab of glass, and the distance of the camera is so easy to adjust on the post."

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THE BULLETIN is indispensable. We are pleased with the recent change, and the new dress. It fits well; we like the pattern; it is all wool and a yard wide. It is the photographer's headlight.

J. D. DURGAN,
Conn.

EXPOSITION JOTTINGS.

[By our Special Correspondent.]

YOUR correspondent is pleased that he can announce the long dead-lock in the Photo Section broken at last, and that Photo exhibits which have stood around so long half open, looking indescribably forlorn and neglected, are being cleaned up and placed in order. The long looked-for cloth to cover the bare boards has been received and hung, and exhibits from many eminent photographers will soon be ready for the inspection of visitors who look eagerly for any signs of artistic interest—so far with but little satisfaction.

How much they would be interested is evinced by the numbers who have wandered along the bare walls, looking at the scattered and meagre display—all the management have so far given.

For lack of better things, even the Lightning Artist from Chicago is surrounded by admiring crowds and kept busy filling orders.

Chicago has the reputation of being the "fastest" city on the continent, and her "fast" artist paints a panel landscape, in oil, on canvas 10x18 or so, from any given subject in ten minutes, or while you wait—all for one dollar, cheaper than Photos at a dollar a dozen. Art reduced to its lowest terms.

There is believed to be material here for a good Photographic display if it is well arranged. Being Superintendent of the Photo Section, and from his well known devotion to photography, it is expected that Mr. Wilson will lead the way with an exhibit interesting and ornamental. All true leaders say, 'Come, follow my lead,' not 'Go as I direct,' and he will undoubtedly lead off with an example to emulate.

Your correspondent will describe it with the many others when fully prepared.

The Centennial Photo Co. is now producing excellent work. There were some difficulties to overcome at the start, and some changes to make before the machinery became well adjusted. Some who came in with great pretensions have been obliged to "step down and out."

Mr. Wilson is not one to tolerate bad work where good can be made; and undoubtedly, in the experience of photography, the Exposition, under the semi-tropical condition of heat and dampness, will add a valuable chapter to dry-plate experience and will be looked for with interest.

The Main Art Gallery will be open before many days.

Your correspondent has had a preliminary view of the walls, nearly covered with magnificent pictures. The preparations for the art exhibit have proceeded in true Southern style, as if time was of no account and punctuality was not a virtue. The Mexicans from further south, and of a more native Southern race, illustrate the disregard of all Southern countries for time and punctuality. Mexico is really the Lion of the Exposition. She is spending more money than any other one Government, either of our separate States or foreign countries.

She is building a large and costly house as quarters for a regiment of cavalry, with grounds and gardens in the true Mexican style, and an iron octagon temple in elaborate Oriental or Moresque architecture, elaborately ornamented and painted in brilliant colors, beautifully blended, as a repository for her exhibit of gold and silver ores, strange and valuable minerals, rare and precious stones of all kinds, from her mountains and valleys.

Mexico is a great natural store house of inexhaustible riches, which she thus seeks to make known to the world, but they proceed as leisurely as if the Exposition was to be next year, not this. They will not be ready before March, and thus will show their national character as well as their national resources.

But in this great waking up of nations they are coming rapidly to the front and wheeling into line for the grand march of national progress. The Grand Army of Progress, which will soon take in every nation of the world until civilized comfort and enlightened education, pervades the whole earth. The Grand Army of peaceful progress, whose great field days and grand reviews are just these great National Expositions, less costly and more noble than all the triumphs of war since the world began.

NEW ORLEANS, Feb., '85.

ASSOCIATION OF OPERATIVE PHOTOGRAPHERS.

392 Bowery, N. Y., Jan. 7th, 1885.

President BUEHLER in the chair.

The reading of the minutes of the previous meeting was dispensed with, and after the election by acclammation of Mr. von Sothin and Mr. D. Cooper into the society as members, Mr. Duchochois read a paper, accompanying his lecture with experiments, previous to which Mr. Hallenbeck announced the death of Mr. Henry McBride, who was the first man to make a daguerreotype of Niagara Falls many years ago.

Mr. Duchochois' Lecture.

THE METALLOIDS OR NON-METALLIC ELEMENTS.

THE metalloids are classified according to the number of atoms of hydrogen these elements can bind together in a molecule, viz.:

1ST GROUP—*monads*—Hydrogen, Chlorine, Bromine, Iodine and Fluorine.

2D GROUP—*dyads*.—Oxygen, Sulphur, Selenium and Tellurium.

3D GROUP—*triads*.—Nitrogen, Phosphorus, Arsenic and Boron.

4TH GROUP—*tetrads*.—Carbon and Silicium.

HYDROGEN.—Hi=1.

Hydrogen is a colorless, inodorous and testless gas. It is not deleterious and can be breathed without danger when pure.

Hydrogen is the lightest substance known, being fourteen times lighter than the air. It does not support combustion, being itself very inflammable. In burning it combines with the oxygen of the air to form water and emits a flame without intensity, but evolving heat sufficient to melt the most refractory metals.

Hydrogen is employed to reduce metallic oxides and salts, as it will be explained in the course of these lectures.

In photography hydrogen has no application. However, M. Davanne has pointed out an interesting experiment to show its reductive properties when in the nascent state. This experiment consists in touching with a stick of zinc a plate developed with mercury (daguerreotype) immersed in water slightly acidified. Under the action of the hydrogen evolved the silver iodide is instantly reduced and the image fixed, but a veil is formed which somewhat injures the picture.

For experimental purposes and the reduction of metallic compounds, hydrogen is generally obtained by the action of sulphuric acid upon zinc. The acid should be diluted with about twelve parts of water in order to dissolve the zinc sulphate which otherwise would interfere in the reaction:

$$\underset{\text{sulphuric acid.}}{H_2SO_4} + \underset{\text{zinc (diatomic.)}}{Zn''} = \underset{\text{zinc sulphate.}}{ZnSO^4} + \underset{\text{hydrogen.}}{H_2}$$

The apparatus consists of a flask, the generator, provided with a well-fitting doubly bored cork; through one of the holes a funnel tube is passed which reaches down to the fragments of zinc, and through the other a bent tube is fixed and connected with a washing bottle containing a silver nitrate solution to purify the gas which generally contains small quantities of sulphureted and arseniureted hydrogen. The first part of the hydrogen evolved as soon as the diluted acid is poured over the zinc is mixed with the air from the apparatus and should be allowed to escape (*) for the mixture is very explosive and may produce a dangerous detonation. The gas is then collected in a glass jar filled with water and inverted over the bored shelf of a vessel full of water, the pneumatic trough *Fig.* 1.

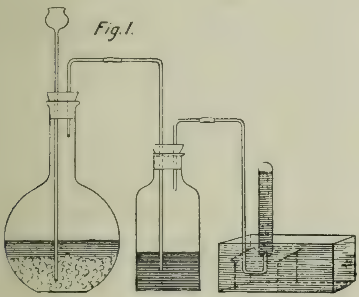


Fig. 1.

The hydrogen thus produced usually possesses an unpleasant smell. An inodorous and pure gas is best attained by the electrolysis of water or by the action of zinc or potash in presence of iron, the zinc substituting itself to the hydrogen to form the double oxide of potassium and zinc.

$$\underset{\text{potassium hydroxide.}}{{}_2KHO} + \underset{\text{zinc.}}{Zn''} + \underset{\text{potassium and zinc oxide.}}{K_2ZnO_2} + \underset{\text{hydrogen.}}{H_2}$$

CHLORINE.—Cl.=35.5

Chlorine is a deleterious greenish yellow gas which, even diluted in the air, produces coughing and a dangerous inflammation of the air passages. It is 2.45 times heavier than the air.

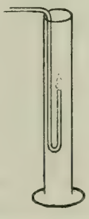
Chlorine possesses a great affinity for hydrogen but not sufficient *per se* in certain cases to cause the combination of the two elements without the intervention of the physical forces, heat, light, electricity; thus, chlorine and hydrogen mixed in equal volumes have no action upon each other as long as the mixture is kept in the dark, but the moment it is submitted to the influence of either of these forces, the gases instantly combine in producing a violent detonation, the result being hydrochloric acid, H Cl.

When chloride has been exposed to sunlight for a certain period, it acquires the property of uniting to hydrogen in the dark (Draper), but it looses this property if after the insolation it is kept in obscurity for several hours.

Chlorine is very soluble in water; the solution has the same properties, the color, the smell of the gas, and is consequently acted on by light; hypochlorous acid is formed and decomposed afterwards by the hydrochloric acid which is formed at the same time. As the violet rays only determine the union of chlorine to hydrogen, the chlorine solution should be kept in yellow or red vials and in the dark.

All these phenomena are interesting, for they show the influence of light in chemical actions—influence which, as it will be seen hereafter, may cause the dissociation of the elements as well as their combination.

Fig. 2.



The affinity of chlorine for hydrogen can be demonstrated more easily than in the above experiment by a jet of ignited hydrogen placed in a cylinder filled by displacement with chlorine, as shown in *Fig.* 2. In the experiment hydrochloric acid is also necessarily formed.

The organic substances, indigo, turnsol, ink—if prepared with tannate of iron—are destroyed by chlorine. The writing bleached by chlorine reappears in immersing the paper in a solution of potassium ferrocyanide, which forms prussian blue with the peroxide of iron, if the latter has not been previously dissolved with diluted hydrochloric acid or oxalic acid.

The bleaching action of chlorine only takes place in presence of water, which is decomposed by the chlorine combining with the hydrogen, while the oxygen oxidizes the coloring matters and destroys them:

$$Cl_2 + H^2O = {}_2HCl + O.$$

This affinity of chlorine for hydrogen also explains its disinfecting action on miasma and organic matters in putrifaction, the deleterious smell of the latter being due to the formation of sulphureted hydrogen, which chlorine decomposes.

$$H_2\,S + 2\,Cl = 2\,H\,Cl + S''$$

Chlorine combines directly with most metals, often with evolution of heat and light; thus, metallic antimony in powder thrown in a cylinder of chlorine takes fire, and falls in a shower of sparks, with formation of chloride

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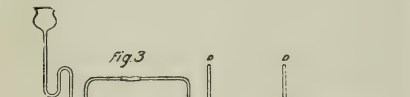
(*) This precaution should be taken with all gases to obtain them pure.

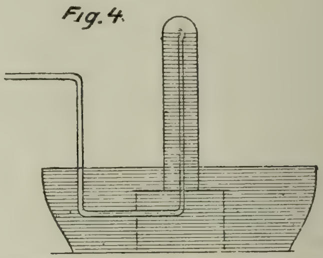
of antimony. With silver it forms a violet silver chloride which, on being exposed to the rays of light decomposed by a prism, reproduces all the color of the spectrum. Unfortunately, the heliochroms, or photographs in natural colors obtained by this process or other similar ones, are not permanent, and fade even in diffused light, no fixing agent having yet been discovered.

Chlorine is easily prepared by slightly heating in a large flask *a*, *Fig.* 3, one part of pulverized manganese dioxide (black oxide of manganese) with four parts of hydrochloric acid. In the reaction the two atoms of oxygen displaced by the combination of the dyad manganese with chlorine unite to the four atoms of hydrogen in forming two molecules of water, and two atoms of chlorine are set free.

$$\underset{\text{h'dr'chloric acid.}}{4\,H\,Cl} + \underset{\text{manganese dioxide.}}{Mn''\,O_2} = \underset{\text{water.}}{2\,H_2\,O} + \underset{\text{m'ng'nese chloride.}}{Mn''\,Cl_2} + \underset{\text{chlorine.}}{Cl_2}$$

The chlorine gas thus obtained is purified in passing through a small quantity of water in a three-necked Woulff's bottle, *b*, to free it from hydrochloric acid, and then through sulphuric acid contained in a second bottle *c*, which absorbs the aqueous vapor it has absorbed in passing through water. The sulphuric acid wash is, of course, unnecessary in preparing the hydraded chlorine, the gas being washed in the first bottle, and dissolved in a series of three Woulff's bottles provided with safety tubes *d*. Chlorine being very soluble cannot be collected under water nor under mercury, to which it combines at the ordinary temperature. It should be collected by displacement in a vial *e*, covered with a cardboard, or, when necessary to obtain the gas unmixed with the air, by placing the delivery tube at the top of a glass jar, *f*, *Fig.* 4, filled with salt water, in which the gas is less soluble, and effecting the evolution of chlorine more rapidly in slightly increasing the temperature. By this method there is very little gas absorbed owing to the small layer of liquid it has to pass through.





HYDROCHLORIC ACID, $HCl = 36.5$.

Chlorine being a monad, or monoatomic element, combines only in one proportion with hydrogen, the result being hydrochloric acid, commonly known under the name of *muriatic acid.*

Hydrochloric acid is a colorless gas fuming in the air by absorption of moisture, and possessing a suffocating smell. It is very soluble in water, which can dissolve it to the extent of 480 times its volume. The most concentrated solution has for formula, $HCl + 2$ aqua, but the commercial liquid does not contain more than about 28 per 100 of real acid.

Hydrochloric acid is a very energetic and corrosive acid. It blackens organic matters and destroys them. Most of the metals, zinc, iron, copper, etc., decompose it in displacing the hydrogen to unite with the chlorine;

$$\underset{\text{hydrochloric acid.}}{2\,HCl} + \underset{\text{zinc (dyal.)}}{Zn''} = \underset{\text{zinc chloride.}}{Zn\,Cl_2} + \underset{\text{hydrogen.}}{2\,H.}$$

All the hydroxides, the carbonates of potassium, calcium, zinc, etc., also displace the hydrogen to form chlorides by double decomposition, thus:

$$\underset{\text{hydrochloric acid.}}{HCl} + \underset{\text{sodium hydroxide.}}{Na\,H\,O} = \underset{\text{sodium chloride.}}{Na\,Cl} + \underset{\text{water.}}{H_2\,O}$$

The reaction represented in the last reaction demonstrates that when hydrochloric acid, or an hydracide and a base act on each other, the products are always a binary compound and water.

Hydrochloric acid is prepared by the action of sulphuric acid on common salt. For this purpose 6 parts of salt in large crystals are placed in a generator, and 11 parts of sulphuric acid progressively added. The gas which is rapidly evolved is washed in a small quantity of water before being collected or dissolved.

The reaction is thus represented:

$$2\,Na\,Cl + H_2\,SO_4 = Na_2SO_4 + 2\,HCl.$$

The Chlorides are soluble in water with the exception of silver chloride and mercurous chloride (calomel). The cuprous chloride, $Cu_2\,Cl_2$, the platinum dichloride, $Pt\,Cl_2$, and lead chloride, $Pb\,Cl_2$, are scarcely soluble. The latter dissolves in a boiling solution of hydrochloric acid and water by equal parts.

The soluble chlorides with mercurous oxide, forms mercurous chloride, $Hg_2\,Cl_2$, which is transformed by chlorine water in mercuric chloride (sublimate corrosive) $Hg\,Cl_2$.

Mercurous nitrate forms in solutions of chlorides a white precipitate of mercurous chloride, soluble in ammonium sulphate, and turning black on addition of caustic alkalies—aqua regia transforms it in mercuric chloride; with lead acetate the precipitate is soluble in boiling water and not altered by ammonia.

On heating a chloride with manganese dioxide and sulphuric acid, chlorine gas is evolved, as represented in the following equation:

$$\underset{\substack{\text{sodium}\\ \text{chloride.}}}{2\,Na\,Cl} + \underset{\substack{\text{manganese}\\ \text{dioxide.}}}{Mn\,O_2} + \underset{\substack{\text{sulphuric}\\ \text{acid.}}}{2\,H_2\,S\,O_4} = \underset{\substack{\text{sodium}\\ \text{sulphate.}}}{Na_2\,S\,O_4}$$

$$+ \underset{\substack{\text{manganese}\\ \text{sulphate.}}}{Mn\,S\,O_4} + \underset{\text{water.}}{2\,H_2\,O} + \underset{\text{chlorine.}}{Cl_2}$$

The chlorides are usually detected by the white precipitate of silver chloride formed on addition of a silver nitrate solution:

$$\underset{\substack{\text{sodium}\\ \text{chloride.}}}{Na\,Cl} + \underset{\substack{\text{silver}\\ \text{nitrate.}}}{Ag\,N\,O_3} = \underset{\substack{\text{sodium}\\ \text{nitrate.}}}{Na\,N\,O_3} + \underset{\substack{\text{silver}\\ \text{chloride.}}}{Ag\,Cl}$$

This reaction is so delicate that one part of chloride dissolved in 400,000 parts of water is sufficient to form an opalescence in the liquid.

This precipitate of silver chloride is characteristic; it becomes violet on exposure to light, dissolves in ammonia, but is wholly insoluble in nitric acid.

Hydrochloric acid has not many applications in photography. Professor Chas. A. Seeley has suggested to expose the positive sensitized paper to the fumes of this acid to prevent it turning brown by keeping specially in damp, warm weather.[*] "The photographic paper is exposed in a fuming box in which hydrochloric acid has been placed in a saucer. The time of fuming depends on the strength of the acid, and is easily learned by practice. Thus prepared, the sensitized paper will keep for a long time if kept in a dry atmosphere." Before printing, the paper should be strongly fumed with ammonia.

(*To be continued.*)

During the reading of Mr. Duchochois' paper, Mr. Hallenbeck said that Mr. O'Neil added muriatic acid to nitrate of silver in his sensitized bath, forming a precipitate—redissolved some of it; some is left in the bottom of the bottle.

MR. BUEHLER—I knew he used chloride in the silver bath. We use iodide in the silver bath to counteract the free use of nitrate of silver. I hope every gentleman has appreciated Mr. Duchochois' clear and explicit lecture on chemistry, and I think he deserves all the thanks the Association can give him.

Vote of thanks given to Mr. Duchochois.

MR. BUEHLER—The direct mixture of iodine with ammonia forms a very explosive material. Ammonia is a very good compound to clean the hands from nitrate of silver stains.

MR. VON SOTHIN—At the last meeting Mr. Cooper mentioned an experiment of his with reference to the use of carbonate of soda, as applied to dry plates, after exposure, and before development, for the purpose of eliminating the bromine. Mr. Duchochois does not believe in the formation of a sub-bromide and of the salts of silver by exposure. I believe that bromine is liberated and that the silver remains soluble and exists in a metallic form. If a plate has been developed, the bromine would mix with the developing solution, and act as a retarder. Mr. Cooper has tried to eliminate the bromine.

The difference in density and the amount of detail produced with previous application of carbonate of soda as compared with this is very great.

I have found that although carbonate of soda is very useful in forming this bromide, ammonia is more simple. Ammonia combines directly with bromine, and the result is bromide of ammonia. Carbonate of soda, which Mr. Cooper uses, combined with bromine, forms bromide of sodium. I think it is better to use a very weak solution of ammonia. This bromide is easily washed out.

To free the developer from the retarding action of the bromine, we put ten drops of ammonia into four ounces of water. With about three drops the developer proceeds very quickly. We should rather under-expose, and a greater amount of detail would be brought out that could not be brought out by forcing.

No development can take place if the silver exists in a metallic form. My opinion is that the molecules of silver affected by light become decomposed.

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[*] *American Journal of Photography*, 1865.

MR. BUEHLER—Do you admit that bromine is liberated when the action of light has taken place?

MR. VON SOTHIN—I do. The liberation of iodine and bromine takes place during exposure.

MR. BUEHLER—A practical photographer could not call chemistry to his aid to find out the difficulty when his plate works a certain way.

MR. COOPER said that there was free bromine present, and to get rid of this free bromine, which will combine with potassium or sodium in the developer, he washes the plate with a combination of carbonate of soda.

MR. DUCHOCHOIS—Somebody says that when carbonate of soda was put on the plate to eliminate the bromine the reaction could not take place.

After some further discussion on the subject, Mr. Hallenbeck gave to the Association a recipe for making chloride of gold and potassium, and the meeting adjourned.

REGULAR MEETING.

FEBRUARY 4th, 1885.

Mr. BUEHLER in the chair.

The meeting was opened with the usual preliminaries, after which a vote of thanks was tendered to Messrs. Anthony & Co. for periodicals presented by them to the Society.

A business discussion next occupied a short space of time.

Mr. DUCHOCHOIS then called attention to the fact that he had not been correctly reported in the remarks he made at the last meeting, relative to removing silver stains from the hands. He is made to recommend iodine and ammonia, a highly explosive compound, as specially suited for the purpose. He deplored the unfortunate lack of accuracy in reporting matters of chemical importance, and remarked that the proceedings of the meetings were liable to be rendered ridiculous thereby, as intelligent readers would be startled at such a reckless distribution of not only valueless, but dangerous, information.

Mr. VON SOTHIN agreed with Mr. Duchochois, and had occasion to call attention to the fact that he too had suffered from the same cause. His remarks made at the previous meeting on the subject of Mr. Cooper's theory of the action of light on the gelatine bromide of silver film were to a great extent rendered unintelligible by the errors in the chemical equations given in his formula by the report.

Mr. DUCHOCHOIS then continued his series of lectures on elementary chemistry and its application to photography, which will appear.

Quite an instructive discussion arose on the subject of engraving on glass with hydrofluoric acid through a photographic impression on gelatine, which was suggested by Mr. Duchochois' remarks on that point in his lecture.

Mr. VON SOTHIN presented for inspection a stereoscopic plate on which were seen side by side an excellent negative and positive of the same subject. He then explained the method of obtaining this result, as follows:

A stereoscopic plate being exposed and developed as usual, is well washed, and one-halt being protected, the other is exposed to the light, thereby printing a positive through the superficial negative on the unchanged bromide of silver beneath. That portion of the plate is then treated with nitric acid to remove the deposit of silver forming the negative image, after which the plate is well washed and development continued, the positive appearing and the negative increasing in strength.

This very beautiful and interesting experiment was the theme of discussion for quite a while. Mr. Von Sothin mentioned that he had formerly published an account of this process in the *St, Louis Photographer*, in 1879.

The meeting then adjourned.

D. C.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

FEBRUARY 3d, 1885.

President NEWTON in the chair.

Receipt of the different journals acknowledged.

Report of the Executive Committee by Mr. GARDNER:

MR. PRESIDENT AND GENTLEMEN:

In carrying out the programme duly advertised for this evening the Committee steps aside from its usual custom of presenting only such formula and demonstration (pertaining to photography) as are designed to instruct, simply, and offer instead a lecture by Prof. S. M. Spedon, relative to the art element in photography, which will no doubt be entertaining and amusing as well as instructive.

There can be little doubt that photographers, as a class, have underrated the art element in photography. Their chief study has been with the chemical and mechanical branches of the business, and formerly these were quite sufficient to engross the entire strength, ingenuity, and patience of the most skillful of the craft. The uncertainty of the results, even with the best class of workmen, and the obstacles they were obliged to overcome at every step, often disheartened the most resolute, and drove their weaker companions to seek an employment over which they might hope to obtain a more perfect control. At this point in the history of photography, not one amateur in a hundred could be induced to amuse himself in picture-making long enough to even learn the rudiments of the art.

But since the advent of the gelatine emulsion process, and the establishment of factories for the making of all kinds of mechanical devices and chemical compounds used in the art, a new impulse has been awakened, and thousands of both men and women, who make no pretensions to mechanical or chemical skill have displayed in their work an art element not unfrequently neglected in the old school professional.

There can be no doubt that those photographers who have been the most faithful students of art have been the most successful in their work, have obtained a more extended fame, and have aided greatly in raising the fraternity to the position it should justly claim. Hence it has been deemed expedient by the Committee to use their influence in procuring, whenever possible, art teachers, as well as mechanical and chemical, in hopes that due interest would be awakened in each and every essential to success in the limitless field of photography.

Our President, Mr. H. J. Newton, being himself an artist, has kindly consented to say a word or two on the "uses of art in photography" as introductory to the lecture of the evening.

The programme for the next meeting (the first Tuesday in March) will be, beside the usual routine of business, a paper on photography entitled "Fluorescence and Phosphorescence," by Prof. L. H. Laudy, of the School of Mines, New York City. Also a short paper, if time permit, entitled "Talks with Photographers," by the chairman of the Executive Committee.

The President, Mr. NEWTON, made a few remarks on the subject of the evening, in which he said that he thought that any one who set himself up as a photographic artist should know something of the laws relating to art in lights and shadows. Almost any one with a little instruction can take a plate of glass, flow it with collodion, expose and develop it, and still not know the first letter in the alphabet of art. All that is purely mechanical. That is making a negative. Making a picture is a different thing, and requires something more than mechanical skill. A photographer in these days must know something of art; he must know when a picture is lighted properly and when improperly, which has more to do with his success than compounding of different formulas.

MR. GARDNER then introduced Prof. S. M. Spedon.

PROF. S. M. SPEDON gave his popular lecture, entitled "Character and Characteristics," which was highly amusing as well as instructive.

The vividness with which he portrayed the different characters with the crayon was loudly applauded, and the rapidity with which he drew full-length portraits and landscapes not only demonstrated his natural genius for art, but was the evidence of much careful study. Not only his expertness in handling the different colored crayons attracted the attention of the unusually large audience of ladies and gentlemen present, but their interest and good humor were greatly heightened by his interesting and facetious and entertaining monologue.

Prof. Spedon, under the guise of entertainment, naturally leads his auditors to a full appreciation of art study. for while he is thus amusing the imaginative faculties, he never fails to instruct and guide them.

MR. MASON said that he had been the innocent cause of a discussion at the last meeting in regard to a clock. To-night he had brought a lens for photographic use, made on a peculiar principle, and having some new features about it. All photographers knew that in American lenses the screw that attaches the lens to the flange was very fine. The maker of this lens, who was an optician well known in this country and in Europe, had made the front very coarse, so there was no trouble about the lens striking the proper position at once. The front lens was a triple one, and the back one double, so there were five lenses in the two. They are very thin, and there is very little glass for the light to pass through. It is rectilinear, and this one will cover an 8 x 10 plate, with an 8-inch focus. The diaphragm was constructed so that it could be removed entirely, and it can be changed very easily.

Mr. Mason said that he had made a portrait with the lens, and that the two-inch head was well defined.

The lens is intended for all kinds of work, indoors or outdoors, and is called a Universal Lens. It is not in the market yet, but the price will probably be about $30.

A vote of thanks was tendered Mr. Spedon for his interesting exhibition of his ability to sketch in crayon.

MR NEWTON—I would like to hear something further on the subject of the lecture and its application to photography.

MR. MASON—I think we can learn a great deal more about art, as photographers, by the study of work outside of photographers than by following the work of most photographers. The majority of photographers produce very few artistic pictures.

The readers of the photographic journals must have been entertained and instructed by the article now published by the well known photographer, Mr. Robinson. I was very much impressed with the plainness of the argument he there uses, in giving his idea of what may be done in the way of artistic photography.

We have such facilities now for illustrating the work of our best artists that I wonder our journals do not illustrate the peculiar points of the best pictures.

In looking at a picture made by Sarony, Kurtz, or Bogardus, we do not have to look on the back of the picture to recognize whose work it is.

The lecture we have had to-night indicates how few lines show the character, and how the position of a figure may show the character of the sitter and often the character of the photographer.

MR. SPEDON, thought that the trouble was that photographers studied their profession mechanically, instead of artistically. He said he had had his picture taken, and the photographer had placed him in such a light that his head was a perfect square in the picture, and one side of his face was entirely in the shadow; a Rembrandt effect. He also thought that in a gallery there were not enough conveniences, that art was sacrificed to the avarice of the general class of people.

MR. NEWTON said he was inclined to believe that artists were born and not made. I know many photographers who could not make a picture like Sarony or Kurtz if they should study from now until one hundred years hence, because both of these gentlemen are artistic geniuses.

In regard to the Rembrandt effect spoken of, it is a common error among many that this name designates a photograph, where the largest sized exposed part of the face is in shadow. Rembrandt never painted a single head in that way. He painted his lights and shadows in such strong contrast that this wrong idea has arisen.

Meeting adjourned.

ROCHESTER PHOTOGRAPHIC ASSOCIATION.

AT a meeting of the Photographic Association of Rochester, N. Y., held December 29th, 1884, the following questions were discussed:

Question 1st.—Is gold substituted for, or deposited on, the silver in a print?

Mr. FOX stated that there was some difference of opinion in regard to this question. He said that a person could experiment with chloride of silver and chloride of gold, and would not be able to perceive any difference in the appearance of the chloride after bringing them in contact. I presume it is a fact that the chloride of gold does not act on the oxide of silver, but on the sub chloride of silver, and the gold will act upon it by parting with its chloride; and the sub chloride of silver will take just so much chlorine, as I understand it, and the gold more readily gives up its chlorine—the silver seems to have a greater affinity to it than the gold.

Mr. WARDLAW gave it as his opinion that the silver is not removed from the print by toning. If the gold was substituted for the silver there would be no necessity to fix the prints afterwards.

Mr. FOX thought there would be no necessity if they held all the silver after washing.

Mr. LARNED said his idea of it was, that it was simply a gold plating, the same as you gold-plate a silver spoon. The silver spoon would tarnish if exposed to the air, whereas the gold would hold its color.

Question 2d.—How long previous to toning is it preferable to add chloride of gold?

Mr. LEE had, in his experience, obtained the best results in toning by adding the chloride of gold just before using.

Mr. WARDLAW asked if that did not depend upon the alkali that is used?

Mr. LEE said it was possible. I have used a bath that was made up six or twelve hours before using.

Mr. WARDLAW—I know the carbonate of soda bath does better not to use the gold just before toning. It precipitates the gold, and after an hour or an hour and a half you could not tone except very slowly.

Mr. LEE—If you add too much carbonate

of soda to the bath, would it not precipitate the gold?

Mr. WARDLAW—Yes, the chloride of gold solution in the nitrate of silver attacks the print unevenly and gives it a measly appearance; it will tone in spots and be all sprinkled over as if with cayenne pepper.

Mr. LEE asked if that could not be produced by some other cause?

Mr. WARDLAW said "Yes, it was sometimes due to the paper."

Mr. EASTMAN asked if it made transparent spots?

Mr. WARDLAW—It would; looking at a print by transmitted light, the parts that are blue transmit the light a little better than those that are red.

Mr. LEE thought that the question of what time it was preferable to add the chloride of gold depended upon what kind of a bath was used.

Question 3d.—Is the same dry-plate more sensitive in summer than in winter?

Mr. EASTMAN said that he had never noticed any difference in the sensitiveness of plates in winter or summer, and I doubt very much whether any difference can be shown. I have heard that heat affects plates sometimes by fogging, but I do not think it is accompanied by any sensitiveness. I have also heard it said that the carbonate of soda developer was twice as quick as the ammonia developer, but I have never been able to find it so.

Mr. FOX asked if there was not a difference in the rapidity of the action, and also in the difference of appearance after developing a wet plate whether cold or warm?

Mr. WARDLAW—Yes, sir.

Mr. FOX said that his experience with wet plates was that when everything was cold the shadows were very hard to bring up.

Mr. WARDLAW stated that in the case of the dry plate its sensitiveness had already been obtained, and in the wet-plate it was done by the heat of the chemicals.

Mr. FOX asked if the dry plate is very cold and the developer cold and your chemicals also, do you think the action of the developer would be as rapid or free to act, and therefore would it not take more time?

Mr. WARDLAW said he had not found it so, but thought that was the case with wet plates. I think the developer is a trifle slower in cold weather than in warm.

Mr. LEE said he did not discover much difference. A plate that is badly over-timed would be as hard to manage in winter as in summer.

Mr. EASTMAN said he would like to ask Mr. Wardlaw if he has ever seen it demonstrated that a carbonate of soda developer would give more printing detail than ammonia?

Mr. WARDLAW said he thought not.

Mr. EASTMAN thought that whatever was gained in the shadows was lost in the lights.

Mr. WARDLAW—I have found the printing detail was better with ammonia than with the carbonate of soda. If you obtain a little more detail with the carbonate of soda, you lose it again by the harshness of your negative. In fact, if you print it down to get that amount of detail—that is, the high lights—then you have entirely sunk the shadows not only with one brand of plate, but with every plate that I have tried; it is peculiar to that kind of developer.

Mr. POMEROY said that Mr. Inglis told him he had been leaving the sulphite of soda out of No. 2. I take the sulphite out of No. 2 and get good results. I find I can shorten my exposure at least one-fourth. I use simply pyro. with citric acid with a little bromide of ammonia—40 grains to the ounce of pyro. and 60 grains of the citric acid.

Mr. EASTMAN—I have seen sulphite of soda used alone as a developer; it depends upon how much alum you put in the hypo.

Mr. POMEROY—Certainly; soda is a bleacher, and if you use the sulphite you do not need the alum. I believe that I can bring out a good negative with carbonate of soda. I have used pyro., the Edwards developer and Mr. Hoover's formula, but for all purposes and all plates I have found the carbonate of soda developer was ahead of any ammonia developer I have used.

Mr. WARDLAW said he had seen negatives developed with pyro. and ammonia which were the most perfect things in black and white he ever saw. That is more than I have ever seen in any other developer.

Question 4th.—Can you make as good copies on dry plates as on wet, and if not, why?

Mr. KNAPP stated that he knew of no time when dry plates made inferior copies to those where wet plates were used, unless they were improperly handled. He thought if dry plates were especially adapted to any branch of photography, it was copying. Take, for instance, a case where you have an old, faded picture to copy, which, with a wet plate would require so long an exposure that it would be almost impossible to keep the plate from drying, while with the dry plate all is made easy. Another advantage which the dry plate has over the wet is, that it does not require bright weather to do our copying; it can be done on dark days. Taking all things into consideration, I think dry-plates are a great acquisition to photography as regards copying.

Mr. LEE said he had made copies on dry plates for the last year or more, and had found them very satisfactory. The advantage Mr. Knapp claims is a fact, there is no doubt about that, they are far ahead of wet plates for copying.

Mr. FOX asked if you could get more detail?

Mr. LEE said you could get all there was in the picture in copying old pictures. I do not think it is always desirable to get detail. You sometimes want to leave out what is commonly called "detail;" it is objectionable in an old picture; the shadows are generally filled up with wool or fuzz that you do not want.

Mr. WARDLAW did not think it made any difference, excepting in a few isolated cases. I think for an oil painting you get a better production with the dry plate than with the wet. When you want to shut off a good deal of light and to get rid of the reflections, then the dry plate is superior; but when it comes down to copying an ordinary photograph, it does not make any difference whether you use the dry or wet plate.

MEETING JANUARY 26.

AT a meeting of the Rochester Photographic Association, held January 26th, a paper on "Landscape Photography" was read by Mr. PETER MAWDSLEY, who prefaced the reading with the remarks: that it was not his purpose to enter into a long disquisition on Art in relation to Photography, but rather to offer a few hints; the results of observation in his own practice. One great end of all papers read before this society was to excite discussion amongst the members, and with this idea in mind he had divided his subject into "four heads." *

Mr. LEARNED moved a vote of thanks be tendered Mr. Mawdsley for his very interesting and instructive paper, which was carried.

It was also moved and seconded a vote of thanks be given to Messrs. E. & H. T. Anthony & Co. for the very generous supply of ANTHONY'S PHOTOGRAPHIC BULLETIN and also to the Scovill Manufacturing Co. for their kindness in furnishing the society with a volume of their very valuable journal for 1884.

Mr. DUMONT exhibited four 12 x 15 genre pictures, produced by Mr. Smithers, of Glasgow, and also two others, one by Mr. Mawdsley representing a scene in Wales, and the other by Mr. Dumont, an instantaneous view taken from the deck of a rapidly moving steamer where the lens was pointed almost directly to the sun and the detail is brought out of the shadows.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Special Meeting, Jan. 28th.

OFFICIAL REPORT.—*Continued.*

The PRESIDENT: Before we proceed to make the experiment of photographing the audience, I have a few words to say concerning the criticism which has been made in one or two of the recent issues of the *Photographic News* and the *Photographic Times* concerning our Committee on Gelatine Plates. In the November 28, (1884) issue of the *Photographic News*, I find the following:

> TESTING AND REPORTING ON COMMERCIAL PLATES.—Such dry plate manufacturers as may desire to have their plates tested and reported on can send samples to the Society of Amateur Photographers, 1,262 Broadway, New York. In this country (meaning England) such a candid report as the Amateur Society of New York proposes to issue would be almost certain to lead to actions for libel. In the United States, however, actions for libel are comparatively rare, the more practical process of administering a whipping to the offender being generally approved of. The Committee on Commercial Gelatine Plates consists of Mr. H. J. Newton, Dr. John H. Janeway, and Mr. Dexter H. Walker. We presume, however, that the President of the Society, Mr. F. C. Beach, takes an *ex-officio* position on the committee.

From the *Photographic Times* of December 18, 1884, in an article on the "Testing Dry Plates by Committee," I find the following paragraphs:

> We are of the opinion that they are undertaking an invidious task, and one that must prove unsatisfactory to all parties concerned.
>
> They are to make a trial of some of the plates commercially procurable, and issue a public report—public at any rate as regards the members of the Society—stating their estimate of their quality. To do this would, we believe, be impolitic and invidious, and incidentally it might prove unjust.
>
> No report as to the comparative merits of plates is capable of being issued by even the most competent amateur juror to which the non-successful competitor may not take exception, and imply hostile motives or inexperience in the working of his plates on the part of those to whom the reporting or testing has been intrusted.
>
> It is a question whether the journalist who published a report containing anything injurious to the business of any plate-maker might not find himself soon made amenable to the law and cast in damages.

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* See full report on another page.

The article closes by advising this Society to withdraw from the undertaking.

In this connection I desire also to read some parts of a letter which I have just received from Messrs. C. & V. E. Forbes :

OFFICE OF C. & V. E. FORBES,
ROCHESTER, N. Y., Jan. 22, 1885.
MR. F. C. BEACH,
361 Broadway, New York.

Dear Sir—We are interested to know how you are progressing with your tests with a view of finding out what plates are good for amateurs. We think the plates sent you were fair representatives of our work. Would you like any more for further tests? If so, we shall be happy to send them as before, but from other emulsions. It would also be a good plan to try some of the plates that you can purchase from the dealers.

We have thought, from an article that appeared in the *Photographic Times*, that perhaps you might not make the results of your work public. Now we would really like to know what you think of our plates. We shall be happy to hear from you, and any suggestion you may make we shall gladly receive.

Very respectfully,
[Signed] C. & V. E. FORBES.

P. S.—It does *not* seem to us that it would be right to publish anything that would be detrimental to any makers' plates.

From these criticisms and this letter you will be able to form some idea of the way the proposed work of this committee is regarded. I have conversed with other dealers who hold the opposite view. My opinion of this advice is that it is wholly gratuitous and is not entirely sound, for we must bear in mind that the gelatine plate is comparatively a new article and is susceptible of great improvement, hence it is more likely to change in its general and peculiar characteristics than any other article which we use. Those of you who have been compelled to mourn over the loss and spoliation of many fine negatives on which you had expended much labor, time and money, in procuring, due to no lack of manipulation or care on your part, but to the original defective plate itself, as sent out direct from the manufacturer, will sustain me in the assertion that the element of change spoken of is too common to go unnoticed. If the dry-plate manufacturers undertake to put on the market what they generally term the most perfect plate ever made, and warrant them in every respect, they should endeavor to live up to that statement, and I presume a majority of them strive to do so. But as the eyes of the managers or proprietors are not all-seeing at the same moment in the various departments of their extensive establishments, it sometimes happens that their employees disregard the strict rules, which I presume are expected to be enforced, and, unknown to the proprietor, put up something which, as sure as fate, will fall into the hands of the unsuspecting (I will not say poor in a financial sense) amateur. His only satisfaction, then, is, that by means of an expensive and tantalizing experiment, he discovers the plates were defective before being put in the holders, and his failure to obtain good negatives disgusts him with the plate. Such disagreeable experiences seem to demand that some means be taken to compel the manufacturers to pay more attention to the needs of the amateur, and what better method can be adopted to bring this matter to their notice than an impartial trial and testing of the plates themselves. For this reason it is especially gratifying to me that there are among our number gentlemen who are willing to give up their time for the purpose of testing all plates put upon the market. The result of their impartial experiments will form the subject of a special record, which will be open to all members of the Society, and to any who wish to publish the same, and will simply comprise the facts as they are discovered. It is not the object of the committee to either praise or censure any man's plate, but to present the facts in such a way that any member can form his own conclusions. I think we ought to feel thankful to these gentlemen for volunteering their service, as I have no doubt, from the results obtained, we shall learn much valuable information. New plates are continually being placed on the market aud old ones are liable to disappear; all should be annually tested by some competent gentlemen for our common benefit. I would therefore suggest that "The Committee on Gelatine Plates," be made a permanent standing committee, whose duty shall be the annual testing of dry plates, and also the testing of any special kinds of plates or sensitive surfaces which may be brought to their notice. The following letter, which I wish to read, is from parties who have supplied our committee with plates, and will be interesting in this connection, as showing how some of our work is regarded from the manufacturers' standpoint. It is from Beebe & Payne, of Chicago, Ill. :

CHICAGO, ILL., Jan. 3d, 1885.

F. C. BEACH, ESQ.

Dear Sir—I beg leave to report that we have been testing Mr. Newton's yellow prussiate of potash developer on some of our plates that were so rapid that they would fog with any ordinary developer; they came out just as clear as any ordinary slow plate. We tried them at Mr. Hesler's gallery, and used the red prussiate as he did not have any of the yellow. If the committee use that developer on my plate I think they will find it to be the most rapid plate in the market.

I hope the reports of the New York Amateur Society will be reported fully and very carefully, as they are the most valuable of any we have.

Wishing you a Happy New Year, I am,

Very truly yours,

C. K. BEEBE.

Applause followed the reading of the letter, and then ensued the following discussion:

Mr. H. J. NEWTON: Mr. President, ladies and gentlemen—In view of my relations to this committee, it may be thought proper that I should say something, as this subject has been brought up to-night. I cannot speak for the committee upon the subject, as the subject has never been brought to the notice of the committee as a committee. I can only speak for myself, and I do not want to have it supposed I have not fully appreciated the magnitude of the work that this committee has proposed to do for this society. I think also that each member of the committee have, and furthermore, I, as an individual, may, or ought to be, exceedingly grateful for any advice, especially when that advice is tendered by those who know more about the subject than I do and are entirely disinterested. Now, I do not want to have these persons get into any delirium by fright over the idea that we are going to jeopardize ourselves to the danger of being mulcted to a large amount for damages in a suit for libel, but I do want it understood that what this committee reports the members of this Society can implicitly depend upon as being absolutely accurate. (Applause.) What the Society will do with the reports of this committee the committee does not know, and it is possibly none of their business, but that the Society will make good use of it, if it is worth anything, I am quite sure. As it has been remarked, there are continually new brands of plates being introduced of more or less merit, and experiments are continually being made by all manufacturers, for the purpose of improving the quality of their plates, therefore there are changes occurring constantly in the plates of a majority of the manufacturers. There is scarcely a week that passes but there is some improvement manifested, and new makers are coming forward, and of course it is proper that their plates should be tested. In reference to this danger of suit for libel, I would say in that connection just this: This committee has prepared a circular which has been sent to all the manufacturers known to it, and a large number have responded and have forwarded to the committee plates of their manufacture. Now, does any one suppose for a moment, does any one want to impeach the integrity or the intelligence of this committee by undertaking to make it believe that when any one sends us a plate under that invitation that there is the slightest danger, or can be? I have conversed with many of these manufacturers myself, and they are all, as a rule, anxious to have the committee test their plates. All have confidence in their own plates. They all believe their plates are superior; they will tell you so all the time, and they believe it and covet the opportunity of having them tested by this committee. And this is what we propose to do, to find out what merits the plates possess.

Dr. JOHN H. JANEWAY: I believe I may say with regard to this Committee on Gelatine Plates that I am the great criminal. In the early sessions of the Society I suggested the forming of committees to develop plates, etc. After a while the idea crystallized. As a member of this committee, I wish heartily to concur in the opinions expressed by the President of this Society and chairman of the committee. I must say after hearing, for the first time, the remarks of the *Photographic News*, that I am compelled to believe that the family of Squeers is not all dead yet. And, if that is the case, I hope that none of the family live on this side of the water. If any society in England should attempt to follow out the course which the committee of this Society proposes, and should be threatened with, or prosecuted for, libel by aggrieved plate-makers, I am very certain that the result would be disastrous to the plate-makers. It certainly would be so in this country. It seems to me that across the water the plate makers, and others in agreement with them, want to crush out every attempt made to find out by experiment if what they say in regard to their plates is true. The world for centuries has been searching after truth, and we want to find out the truth in regard to these plates, and in searching for the truth we occasionally come across something also that is not truth. We came across a developer where two-thirds of the salts were wasted. In the developer the excess of the salt further than the amount dissolved is of no use. Other experiments will show other fallacies. I think all the plate-makers in this country who send in plates in response to the invitation extended to them are willing to abide by the decision of this committee, and improve their plates if necessary, and I hope that this Society will continue its committee as long as it sees fit to do so.

The PRESIDENT: One incident I omitted to state, and that is, that to-day I had a sample of commercial plates sent to me for our committee to test, and whatever decision was reached as to the perfectness of the plates would decide the commercial bill which was standing between the two parties. One party refused to keep the plates because they were imperfect, and they sent to our Society to arbitrate in the manner. You will thus see we have commenced to make our influence felt.

MR. WALKER : I only want to suggest that the party who wrote the article should be corrected. They generally make a mistake in location, in names and in everything else. I feel satisfied, as a member of that committee, that we are going to do our whole duty by everything that transpires in connection with these plates. I think it ought to go out as a record, and I want to add my testimony. I have no fear at all of libel. We will keep ourselves within the pale of the law. Prof. Newton took the wind out of my sails by saying that we have already notified manufacturers by a circular, and they have responded by sending plates, and I do not doubt but what our position is a perfectly safe and proper one.

Mr. C. J. DOBBS (of Middleborough, England) : Mr. President—It may be out of place for me to address you at this meeting, but, as many years ago I was bitten by that photographic dog, I would like to say a few words. I crossed the Atlantic only a few days ago, and had an introduction to Mr. Anthony. There I met a gentleman by the name of Partridge—I think it was—who kindly gave me an invitation to be present here to-night. I have been exceedingly interested in what I have heard here this evening; but I am more particularly interested in regard to the question of dry plates. This subject has come before many of the photographic societies in England, and it has been taken up and very warmly discussed. They finally abandoned it for fear of giving offence in some particular direction. I would beg to be permitted to inquire whether it is the intention of the committee to use such developers and such means as each particular dry-plate maker might suggest as proper to be employed with his plates.

My first connection with dry plates was very soon after Mr. Swan, of Newcastle, began using gelatine plates. I do not know whether you give him any credit for his connection with dry plates, but in England we look upon him as very early in the field in using that marvelous thing, the gelatine plate. I am personally acquainted with Mr. Swan, and went through several experiments with him. I have been a plate-maker—I may say an enthusiastic plate-maker, perhaps even a craze plate-maker—for something like the last five years of my life. I have gone through the difficulties to be encountered in that capacity, and I am therefore very much interested in anything that concerns the dry-plate industry. Is it the intention of the committee to give the plate-maker, not the commercial plate-maker, but simply a plate-maker's plate, a test? In all of my five years' experience I never saw a green-fog plate. The developers that are used with the various plates in our country are certainly very numerous, and at the same time very curious. I wish merely to gain the information whether it is the intention of the committee on gelatine plates, in their investigations, to adhere strictly to what the various plate-makers desire should be adhered to in the shape of a developer to be used with their plates?

THE PRESIDENT : The idea is that each plate shall have a careful test of the developer as ordered by the plate-maker, and as put up, according to the directions, and also to be tested with a developer of our own standard.

Mr. H. J. NEWTON : For the information of our friend, I would like to say that we always try the developer that comes with the package of plates. Now, I went out a few days ago with a manufacturer and made two exposures upon the plates that he brought along and took them to my place. He wanted to use his developer, and I mixed up my developer, and we flowed the two plates in my dark room simultaneously, each in a separate dish. Now he learned something. (Applause). And I didn't charge him anything for it either. The plates were exactly the same as regards exposure, but when they were developed his plate showed that it was not more than half exposed, and the plate upon which I used my developer was over exposed, but made a very good negative.

Following the discussion which was quite animated, a recess was taken, and preparations were made, under the direction of the President, to photograph the audience by the magnesium light upon an extremely sensitive dry plate. The members and their friends, including several ladies, were seated at the rear end of the hall, and upon the President's desk was placed the daguerreotype apparatus which had been exhibited. A self-feeding magnesium-lamp was fixed at one side of the room near the President's desk, and two other portable tin reflectors held by two assistants were stationed at each side of the room, each reflector being provided with four strands of twisted magnesium ribbon four and a half inches long, hung from a cross wire near the top of the reflector. The shape of the reflectors, which were about 8 inches high by 6 inches wide, was that of a tin sugar scoop, with an oblique wing at the top projecting forward about an inch and a half. The wire support for the magnesium ribbon ran transversely across the top of the scoop about one inch from the back. A rod two feet long, fitted into a socket on the outside back of the reflector, permitted the latter to be elevated above the head and swung about. In addition to the socket for the rod, a special handle was soldered to the back of the reflector, by means of which it could be carried about in the hand when desired.

Two cameras located at the front of the room, one provided with a Platyscope lens, the other with a Dallmeyer 3 D lens, were focused on the assembly, and were operated by Mr. David Cooper. The slides from the holders having been withdrawn, the magnesium ribbons were simultaneously ignited by alcohol lamps, and at a signal from the President, Mr. Cooper made a simultaneous exposure with both cameras. The duration of the exposure was estimated at 10 seconds, and while it was going on the assistants continually moved their reflectors above their heads, throwing the light from the burning ribbon upon the audience, and at the same time preventing it from striking back on to the lens.

The effect of the moving lights was to soften the shadows, and by being projected at an angle, as from the top of the room, it made a better-lighted picture. Succeeding the exposure occurred the development of the plates in the dark room, which was watched with interest. Mr. Newton employed his ferricyanide and potash developer, but by a marked fogging of the plate prior to being exposed in the camera his negative was not a success. Mr. Cooper developed his plate alongside of Mr. Newton's, using his own soda developer, and, although the time of exposure had been a trifle short, he was able to bring out details in the shadows or dark portions of the picture to a remarkable degree. His negative was voted a success, and clearly illustrated the ease with which pictures may be made at night at a trifling cost.

It was part of the programme to make a positive print from the negative just taken on bromo-argentic silver paper, but, in consequence of the lateness of the hour, this was given up.

Mr. GEORGE H. RIPLEY exhibited a little quarter-plate, reversible back camera, recently made for him by the Scovill Manufacturing Company, on the same general plan as the 6½x8½ camera shown by him at the meeting of December 9, 1884.

The particular feature noticeable was the compact and simple method of obtaining the double-swing back, whereby the usual extra frames and multiplicity of hinges, set-screws, hooks, etc., were entirely dispensed with. The back was easily adjusted and fixed in any position by simply loosening and tightening two set-screws conveniently arranged, and any desired movement could be quickly and readily obtained.

An extension bed was provided to be attached to both the front and rear of the main or central bed when desired, thus allowing an extraordinary draw of bellows for long focusing, similar in construction to the camera previously shown by him.

Every movement that is desirable in a camera was combined in the model shown, and its compactness, excellent finish and lightness, were points which were favorably commented upon by all who examined it.

At a late hour the meeting adjourned.

The next regular meeting will be held on Tuesday, February 10, when it is expected Mr C. R. Pancoast, of Philadelphia, Pa., will give an informal talk about his experiences in India, and lantern slides made from his negatives will be thrown upon the screen.

REGULAR MEETING.

A regular meeting of Society of Amateur Photographers, of New York, was held on Tuesday, February 10th, 1885.

PRESIDENT BEACH in the chair.

The Secretary read a communication from Mr. D. Ireland, Jr., Secretary of the Dundee Photographic Association, in regard to an international photographic exhibition, to be held in Dundee in 1886. Another letter from the Photographic Society of Great Britain, concerning an exhibition to be held in London, under the auspices of the London Stereoscopic Company.

MR. BEACH read a letter from Mr. H. Smith, an English amateur, proposing an exchange of lantern slides.

A synopsis of the minutes of the two previous meetings was read and adopted.

Mr. L. N. McDOUGALL and Dr. A. H. ELLIOTT were proposed and elected as active members of the society.

The Committee on Books acknowledged the receipt of a bound volume of ANTHONY'S PHOTOGRAPHIC BULLETIN for 1884, the "A B C of Modern Dry-plate Photography," "A French book on Photography," and the "Magic Lantern Manual."

The report of the Committee on Gelatine Plates and the report of the Committee on Lenses were read and accepted.

Mr. BEACH said that he thought the work of the Committee on Testing Gelatine Dry Plates was very important.

A motion was made that this committee be made a standing committee.

Dr. WILCOX—In regard to testing gelatine plates, so long as we have no standard of light, there is no way in which we can properly test gelatine dry plates.

The Warnerke Sensitometer is inaccurate, and all the light standards, candles, lamps, and electric lights hitherto adopted, have been equally inaccurate. The first thing necessary is a light standard, and before that is finally adopted, we should put it to the most severe tests possible. If it is possible to arrive at a satisfactory result as regards the quality of negatives, there remains another fact to be tested, the printing value of a negative. We all have seen negatives of apparently equal value, but when put to the test of printing, one would be fifty per cent. more valuable than another. I saw some negatives of this variety last spring, and I was astonished when the photographer told me the quantity of silver and the time required to print from these negatives. There was nothing in the appearance of the negatives that would lead one to suppose this.

Until we adopt an accurate standard the results from testing dry plates that we arrive at are of no scientific value whatever.

I had hoped Mr. Edison would be able to produce a light that would be a standard.

Mr. BEACH said that Mr. Edison intended to produce a light which would be absolutely uniform.

Mr. NEWTON: Following out the suggestion that this committee on dry plates be made a standing committee, there is a probability that there will never be anything final. The outlook for this committee is one of continuous labor. There are continually arising new articles, and the manufacturers of old ones are making improvements or claiming them. We are going to find this out, and the members of this society are going to have the benefit.

We will test any plate any manufacturer will give us to test. Whatever the committee reports, the society can depend upon as being true.

Mr. PARTRIDGE: In the report to-night the committee have shown good reason why they should be a standing committee. For the first time in the history of plate-testing there has been a proposition made which goes down to the measurable bottom of the science of testing. A suggestion has been made here this evening with regard to the use of the radiometer and the kerosene lamp, which will enable the committee to do what none of the experimenters on this side or the other side of the water have succeeded in doing.

I would suggest the use of mineral sperm oil instead of the ordinary kerosene oil, as it is less volatile. I have very little hope of the standard lights which have been proposed in different parts of this country and in Europe. They are little better than the old-fashioned candle.

The motion to make the committee a standing one was carried.

MR. BEACH said that, in relation to the international exchange of lantern slides, with the authority of the society Mr. Parsell and he would make arrangements with the foreign societies who were willing to enter into an agreement for the international exchange of slides.

A motion was carried that the President be instructed to make all necessary arrangements in regard to this.

Mr. PARTRIDGE suggested that, instead of sending the original negatives, some of which were very valuable, that positives be sent from which negatives could very easily be made.

An improved drop shutter with a new attachment by Mr. Ripley was exhibited by which an amateur, when alone, can take a picture and he himself be a figure in it. Its mechanism is very simple. A new camera for instantaneous views designed by Mr. Clark was also exhibited. Specimens of pictures made on the new gelatine bromide paper were also exhibited.

MR. DEAN gave an illustration of how the kerosene lamp took the place of the phosphorescent tablet in plate testing.

Meeting formally adjourned and Mr. Pancoast, of Philadelphia, gave an exhibition of lantern slides, pictures of India. These included a number of beautiful interiors, taken in the Indian Exhibition Buildings, and also some very fine views of Hindoo mosques and temples, taken by Mr. Pancoast in his travels. Some of the interiors of the temples have probably never before been photographed.

[*From the "Photographic News."*]

HOW TO PHOTOGRAPH MICROSCOPIC OBJECTS.

BY I. H. JENNINGS.

LESSON IX.—PREPARING ENTOMOLOGICAL SLIDES.

A GLANCE at the catalogue of the professional preparers will show how popular are insect preparations. Nor is this surprising. The marvelous beauty of form, the gorgeous colors, the elaborate workmanship displayed in the construction of their various organs, together with the minute size of many of the insect tribe, all render them fit objects for microscopic study. Many of their beauties are apparent to the unaided eye, but under the microscope they are increased tenfold; while others alone reveal themselves to the scrutiny of the magic tube. But for it, the delicate mosaic of the butterfly's wing, the mysteries of the gem-spangled elytra of the diamond beetle, the myriad-facetted eye common to the whole insect world, and all the wonders of their internal structure, would remain hidden to us.

As insects vary so much in size, colors and texture, the modes of preparing them for photography must also vary to suit the subject under treatment.

1. *Opaque Mounting.*—This method is alone available in some cases, as the application of balsam or any medium would not only diminish the beauty of the specimen, but often prove destructive in effect. Such objects as scales, such as those of butterflies, the Podura and Lepisma, as well as some wings which are very transparent, as well as small insects like the Tingis and Thrips, which can be successfully photographed by reflected light, should be mounted dry. In the case of small flat objects, as scales, no cell will be required; all that is necessary is to place the scale in position on the slide, and cement a thin cover over it. Larger objects will require a cell, which, for photography, had better be of glass. Glass cells are sold at a cheap rate, look well, and have the advantage of allowing light to pass through their sides, which is often desirable. They can easily be manufactured at home by any one who has a little skill, by cutting rings from glass tubing with a sharp flat file. Various cements may be used for attaching the cell to the glass slip; marine glue is the most trustworthy, but it is somewhat difficult to manage, as it requires a strong heat to melt it. Gold-size, when good, is equally reliable, but the various cements which have been used of late years for mending broken china and glass, such as coaguline, appear to be quite satisfactory, and, being colorless, look best when used with glass cells.

2. *Mounting in Balsam.*—Whole insects are usually prepared and mounted in the following way:—Having killed the insect, either by means of the cyanide bottle or by immersion in spirits, it is set out carefully between two glass slides, which are tied together, and put in a strong solution of potash—caustic potash one ounce, water twenty ounces. Here it must remain for some time, according to its color and texture; but a frequent examination of the specimen is necessary, as some insects dissolve into a jelly if kept in potash too long. One or two days will suffice for most specimens, but others will take longer. When it becomes sufficiently soft it is taken out of the potash, placed in a saucer of pure water, and gently pressed with a soft brush until the contents of the thorax and abdomen are expelled. It must then be washed with fresh water until quite clean, when it must again be set out on a slide in the position which it is finally to occupy, covered with a square of thin glass, and tied down with thread. Here the treatment may vary. The older method was to keep the slide in a warm place, under cover, until the preparation became quite dry, and then immerse it in turpentine.

The objection to this plan was that the insect became full of air, which it is almost impossible to expel, unless by the aid of an air pump. The better method is to drain all the water from the insect after washing, using blotting paper if necessary, and then immerse it in alcohol and water for about a day, and after that in pure methylated spirit to displace all the water. A second dose of pure spirit may be necessary in some cases. The whole of the water will thus be removed by the spirit, which will also render the preparation so firm that, on the application of the balsam, it will not alter from the position in which it was set. When quite free from moisture, a few days' soaking in turpentine will give most specimens the necessary transparency. Some insects and parts of insects may, however, require to be left in turpentine for several weeks before they are fit to mount.

The tissues of some dark-colored insects are best treated with some bleaching agent immediately after their removal from the potash solution. One of the best is as follows:—

Hydrochloric acid	10 or 12 drops
Chlorate of potash	½ drachm
Water	1 ounce

This will remove the objectionable strong browns and yellows of the chitinous portions, which are so fatal to obtaining a good photograph. By examining the object occasionally, the right amount of transparency will be gained, but it is best not to let preparations remain too long in the bleaching solution, because if too transparent they will be as difficult to photograph as if too opaque. The writer recently photographed two splendid flies' tongues, or ligulæ, specially prepared by Topping. These were selected out of seventy-two similar preparations, but while both were perfection as microscopic objects, or for exhibition in the lantern microscope, only one was fit for photography. The other had been bleached too much, and was too thin to give a satisfactory photograph.

(To be continued.)

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

What Our Friends Would Like to Know.

Q.—J. K. writes: I desire to get a prepared paper, or directions and materials for preparing a paper, for making photographic copies of tracings, with dark lines on white ground, in a cheap, simple way, suitable for drawing office, in place of the ordinary blue-print process. The blue-print process is, of course, negative as to colors, giving white lines and dark ground, and is suitable, therefore, only for certain kinds of linear drawings. What is wanted is light and dark in the same relationship as on the original tracings being copied. I send you herewith a sample of paper and developing solution which has been supplied to me, but which is only moderately successful. The background does not come out very white and the paper is so bad as to be impossible of handling when wet, and I am informed that it cannot be supplied of any better quality.

A.—The only good substitute for the blue-print process is to use the new patent gelatino-bromide rapid printing paper, supplied by our publishers, E. & H. T. Anthony & Co. This can be used to produce a paper negative from the tracing, which in turn can be used to print positives (black lines on a white ground). If the paper negative works slow in printing, it can be made more translucent by smearing the back with a little kerosene oil; but use just as little as necessary, to prevent injuring the positive you wish to make from it. In regard to the materials sent, we doubt if they will ever prove successful; the paper is prepared with perchloride of iron and tartaric acid, while the powder is impure gallic acid. By the action of light the iron salt becomes reduced to the protochloride, which strikes a black color with the gallic acid. You will have no trouble with the printing paper mentioned above, in the matter of clear whites; it is easy to obtain them perfectly white if the directions are followed and clean developer is used every time.

Q.—C. F. writes: Can you tell me what would be the action of the fumes of burning sulphur upon daguerreotype plates that have been chlorodized?

A.—If the combustion of the sulphur is imperfect, and the vapor of the element itself comes in contact with the plate, then *sulphide* of silver will be formed. If, on the other hand, the combustion is perfect, and only sulphurous acid gas reaches the surface of the plate, the only action that can take place is the formation of *sulphite* of silver; but we doubt if this is possible, as the affinity of the chlorine for the silver is greater than that of the sulphurous acid. We have never tried this experiment, and therefore speak from general chemical knowledge. In solution, sulphurous acid has no action on silver chloride.

Views Caught with the Drop Shutter.

Mr. S. T. Blessing, of New Orleans, has purchased the business of Blessing & Bro., of Galveston, Texas. The business will be continued as a branch of the New Orleans house, and will be managed by the brother of the above gentleman. Mr. Blessing's reputation as a merchant extends over twenty-eight years in New Orleans; and the "Texas headquarters for photographic supplies" will receive the benefits which this experience has acquired.

Found in the Editor's Box.

A circular saw—A ring-worm.

"Five thousand molecules can sit comfortably on the point of a pin." Herein the molecule differs materially from man.

"A sociable man is one who, when he has ten minutes to spare, goes and bothers somebody who hasn't," says an exchange. This item is correct except in respect to the number of minutes the sociable man has to spare. —*Burlington* (*Vt.*) *Free Press.*

"In regard to early photographic pictures, I think it was Prof. Ed. Emerson, a member of the Amateur Photographers' Exchange Club, who said that the earliest mention of the phographic art is in the Bible, where it says that Moses ascended a high mountain, and "took a view of the promised land."

Coleman Sellers.

Something else has been discovered that came over in the *Mayflower.* This time it is a pair of spectacles that was worn by one of the Pilgrims. The bows are of steel, an eighth of an inch wide, and the glass is as thick as plate glass, making the weight of the spectacles five ounces. From such ponderous appliances as these, then, have the modern eyeglasses of the typical Boston girl been derived. This also accounts for the large noses of the Pilgrims. They had to have them.—*Boston Advertiser.*

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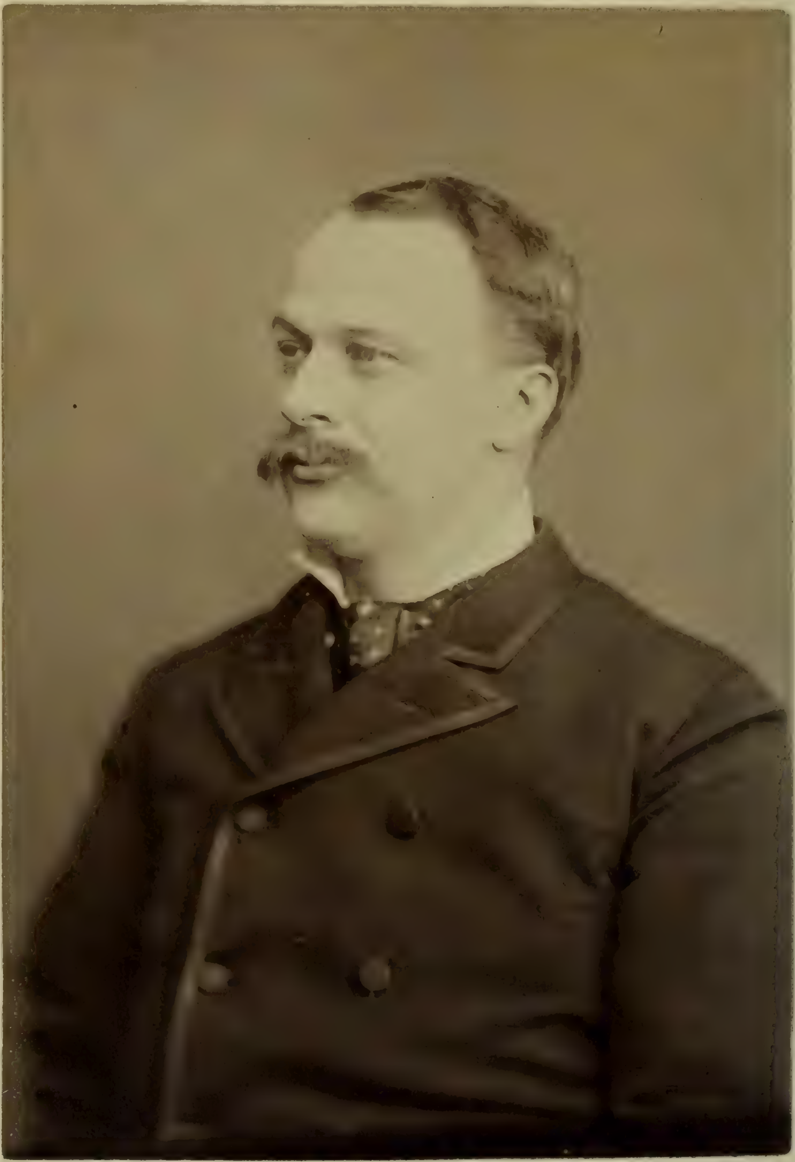
Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.



F. C. Beach.

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ANTHONY'S

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FREDERICK C. BEACH.

It affords us much pleasure to be able to present to our readers a photograph of Frederick C. Beach, now well known as the President of the Society of Amateur Photographers of New York, which is so rapidly taking a leading position among photographic societies in this country.

A brief sketch of his early life will be interesting as showing the tendency of his tastes. He was born in New York City, March 27th, 1848, where he remained until early in the year 1855, when he migrated with his parents to his present residence, at Stratford, Conn.

In the spring of 1864 his father purchased from Messrs. E. & H. T. Anthony & Co. a complete wet-plate photographic outfit. The camera was universal in many of its movements, and from two to three times as weighty as those of the present day. A special house or shop was purchased and suitably fitted up by his father with all the necessary conveniences, and soon young Beach, under the guidance of his father, was initiated into the mysteries of the wet-plate process, which, according to Dr. L. H. Laudy, appeared to have been at its height at about that time. The uncertainties of the bath were such as to make the process very annoying; pin-holes, fogging and the shortness of time a plate would keep after it was sensitized were some of the difficulties which constantly presented themselves. The only way in which he was successful in obtaining negatives of views about the town, a mile and a half away from the shop, was by rapidly driving to and from the points in a carriage—time was then an important element, else the sensitive plate would spoil by drying.

Through the persuasion of some of his friends, in the fall of 1864 and spring of '65, he prepared himself for college, and in the fall of 1865 entered the Scientific Department of Yale College, known as the Sheffield Scientific School. While pursuing his studies he frequently amused himself by photographing his college surroundings, even to taking interiors of the recitation rooms in the college building. In the summer of 1866 he visited Washington, D. C., for the purpose of acquiring some knowledge of the patent business, and while there explained to the Commissioner of Patents a system of photo-lithographing the Patent Office drawings, which has since been successfully carried out by the Government.

In college he pursued a general scientific course, his studies being confined mostly to physics and experimental research. He graduated in the summer of 1868, and took the degree of Bachelor of Philosophy, and it is somewhat curious to note, in this connection, that his graduating thesis should have embraced the subject of "Photography."

After graduating, he went to Washington, and there, during the fall of 1868 and the early part of 1869, he continued the study of the patent business.

During his stay he often improved his leisure hours by assisting his father in the practice of the old-fashioned tannin dry-plate processes, which consisted in exposing prepared plates which had been sent by express from New York in holders, on the various public buildings and points of interest in the city, and in returning them in the same manner for development in New York. Some excellent negatives were thus obtained. In the spring of 1869 he was called to take the position of assistant superintendent of the Beach Pneumatic Tunnel under Broadway, and successfully supervised the work during the months it was being carried on, without the knowledge of the general public. He invented several devices which assisted in the successful working of the pneumatic apparatus, and for some time had charge of the operation of the pneumatic car which was at that time quite a novelty. From 1871, for a period of five or six years, he was engaged in manufacturing electrical apparatus, and introduced a low-priced telegraph apparatus which had a very successful run. In the fall of 1877 he accepted a position in the *Scientific American* office, and has since been engaged there in connection with its patent business. Within a recent period he has had supervision of the photographic department connected with the office, and at present occupies a position on the editorial staff of the *Scientific American.* From this brief outline of his career, it will be noticed that he was naturally interested in the physical sciences, and having had considerable experience with photography, its later phases became peculiarly attractive to him.

By reason of the lack of facilities for carrying on practical photographic experiments, which he had noticed at several meetings of various photographic societies, the thought occurred to him that it would be well to organize a new society, composed only of amateurs as active members, which should be independent of trade interests and combinations, and at the same time be intellectually and financially strong enough to impart photographic information in a practical and experimental manner. A large number of amateurs in New York City and vicinity were not represented by any organization, and this fact, together with the fact that many more would in the future take up photography and thereby need some place to go to for information, strengthened Mr. Beach's idea that a good society was needed.

In March, 1884, he issued a call for the organization of a new independent society, which was largely responded to, and on the 28th of that month the name of the present society was given to it, but its organization was not finally completed until April 8th, 1884, when Mr. Beach was unanimously elected President.

Commencing at this time with but twenty-nine members who paid their dues, the membership has within a year trebled in numbers, and the society under Mr. Beach's guidance has been harmonious, and has rapidly taken the leading position it holds to-day. Its members are composed of gentlemen of intelligence, culture and wealth, who seek to improve their knowledge of photography by systematic and scientific methods. A large measure of the success of the present organization has been due to the personal energy and effort of Mr. Beach in endeavoring to provide and devise interesting, practical experiments for the entertainment and instruction of members, and also to the cheerfulness and generous spirit in which he has given his time to the work. He has been prominent in securing a general exhibition of amateur work at the New Orleans World's Exhibition; he has also favored the organization of a National Association of amateur societies and clubs. He published a formula for a potash developer last summer which has been highly recommended. His last idea has been the suggestion of an international lantern slide exchange between societies in this and foreign countries, and he has lately been authorized by the New York Society to complete arrangements for carrying out the scheme. In 1883 he obtained a special ruling from the Post Office Department at Washington, whereby dry plates could be sent through the mails unopened.

During the past year he invented and described an improved enlarging apparatus for use with gelatino-bromide paper, suggesting the use of a ground glass for focusing the enlarged image upon. (Illustrations of this are published in February number of BULLETIN for 1884.)

In closing, it is needless to add that the secret of Mr. Beach's success in providing for this city and vicinity a popular and substantial photographic society, was in a great measure due to his many good traits of character. His scientific tastes, his honesty and integrity, his zeal and devotion in whatever work he undertook, all combined to fit him for the position he now holds. We trust that he will long continue in the good work which he has inaugurated, for it is very certain that, if he labors in the same spirit as he has heretefore, his efforts cannot fail to be appreciated and recognized by all amateur and professional photographers.

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THE COMING CONVENTION.

WE would remind photographers that the time for the preparation of matters of interest for the Buffalo Convention of the Photographers' Association of America is rapidly slipping away.

Every photographer who has an interest in the art should do his share towards the success of the meeting at Buffalo. That the meeting will be a success we have no kind of doubt. It has been said that there is "a power behind the throne" at work in the matter, and we are pretty sure what that power is. If we mistake not, it is the same power that made the Cincinnati meeting a success. The photographers took matters into their own hands there, and they propose to do the same at Buffalo, only more so.

It may not be out of place to recall what we said of the Cincinnati Convention last August, as we see no reason to change the opinions we then entertained of the undoubted success of that meeting. In the August issue of the BULLETIN we said:

> Very few papers were read, but in extent the oral dissemination of practical information was almost unlimited, and its usefulness will soon become apparent. The wisdom of this course became so manifest that, without doubt, the long, time-consuming dissertations once in vogue will be reserved exclusively for publication by the press from this day forward. And well they might be, perhaps. When the tired workman desists from his accustomed duties and spares a few days for much needed rest, it is unwise indeed to devote the few fleeting hours at his disposal to a discussion of subjects that he can more intelligently pursue in the privacy of his own home and at his leisure.
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> Throughout, the very best of feeling was

displayed, and, for so large an assemblage, an unanimity of action that does great credit to the participants. Good fellowship in high degree prevailed, paving the way for much mutual counsel and instruction; the opportunities for intelligent criticism of the different exhibits were never greater, and many an aspirant for future fame must have been benefited thereby immeasurably.

Comparison affords one of the best means for improvement, and its effect on so large a number is well nigh incalculable. The practical outcome of so much widely distributed experience and observation is very generally believed to be the primal cause of that high standard of excellence to which American photography has thus far attained.

In this respect the Convention just closed was truly successful, promising much for the real advancement of its members, and went far towards promoting that widespread interest which should be shared by the entire fraternity.

In regard to the management of the coming convention, we have heard something said about the appointment of a Dictator-General. We are greatly mistaken in the men who have charge of the Buffalo meeting if they will stand any kind of dictatorial influence. Mr. Landy and Mr. McMichael are men who have large and liberal ideas, and these are in the interest of all photographers, not any particular class. They have set out to insure "the greatest happiness to the greatest number," and with this high ideal we most heartily agree, and shall do all in our power to help them to attain this end.

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IMPURE SILVER NITRATE.

Our attention has recently been called to a variety of silver nitrate lately put upon the market, and whose low price aroused our suspicions. We are informed that this material is made with a crude nitric acid; the crystals contain considerable water and nitrous acid, besides other impurities from the crude acid. We would caution photographers on this point, as it is dear at any price. Good chemicals cannot be offered as cheaply as impure ones; it takes brains to purify them, and brains are worth something.

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To illustrate some remarks made in a recent issue of the Bulletin, in regard to the use of the word Pensé, we quote the following from an order recently handed to us by our publishers: "Please send me a quarter ream N. P. A. Brilliant Pensé Albumen Paper, don't send *pink*, but be sure to send the *Pearl* color."

We would again remark that the name applies to the *shade* of the paper, and not to any other quality. There is no such thing as pink pensé.

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TIME REQUIRED FOR FLOATING ALBUMEN PAPER.

In a recent issue of the *British Journal of Photography*, we find some very pertinent remarks upon the above topic by Mr. W. K. Burton, which we quote as follows:

"I find that all printers have a *practice* in this matter, but they seem to be unable or unwilling to give any particular reasons for the faith that is in them.

"Some months ago I described, at a meeting of the London and Provincial Photographic Association, a little dodge whereby it is easy to discover when all the soluble chloride in albumenized paper is converted into silver chloride. I take advantage of the well-known facts that chromate of potassium will not be converted into chromate of silver by the action of silver nitrate until such time as any soluble iodide, bromide or chloride, which may be present, has been converted into iodide, bromide or chloride of silver, and that chromate of silver is of an intense red color. In fact, I make use of the commonest method of testing for the presence of silver nitrate, and of estimating volumetrically the quantity of it. A spot of a solution of chromate of potassium in water is placed on the back of the sheet of paper to be sensitized—in the corner, of course, unless the work is purely experimental—and the change of color in this spot is watched. When it changes from the original faint lemon tint to a brilliant red it may be assumed that all the chloride in the albumen and paper has been converted.

"Now, I do not pretend that it is necessary to continue sensitizing till a complete conversion of the chloride has taken place. In other words, I do not say that it is necessary that all this soluble chloride in the paper should be converted into silver chloride to give the best results in printing. Indeed, I shall presently show that this is not necessary. Still, extended experiments with the chromate test have given some results, a consideration of which may, I think, be instructive.

"It has for long been known that by the addition of nitrate of sodium, potassium, &c., to the sensitizing bath the strength of the silver nitrate might be greatly reduced without the albumen of the paper being dissolved away in sensitizing. The same result follows from adding alcohol to the bath. This latter fact was noted by photographers long ago, but was first pointed out to me quite recently by Mr. W. E. Debenham. By making use of both the agents mentioned, I have been able to sensitize paper on a bath as weak as three grains of silver nitrate to the ounce of solution. Moreover, I have found it possible to sensitize albumenized paper of most brands on a plain bath, as weak as twenty grains to the ounce, without solution of this albumen to an extent objectionable in experimental work.

"Now comes the point, which at first appears curious—sensitizing paper on baths of gradually-increasing strength and using the chromate indicator. I found that with the increased strength of the bath there was decrease of the time required before the whole of the chloride was converted; that this held up to a certain point, but that beyond that point increase of strength of bath involved increase of time of floating before complete conversion of the chloride took place."

After giving some thoughts in explanation of the fact that after a certain point increase of the strength of the bath necessitates a longer time for floating the paper, Mr. Burton finally says:

"I may say that my practical experience leads me to see that the old rule of sensitizing for a shorter time the stronger the bath, is perfectly sound. I have got better results by floating for only twenty seconds on a hundred grain bath than by floating five minutes on a twenty-grain bath, although in the latter case all the chloride was converted; in the former case only, I imagine, a very small proportion of it. Possibly, indeed, the very fact that but a small quantity of the chloride, *and that on the surface* of the paper is converted with a strong bath, is the very reason why, in practice, a strong bath gives results which cannot in certain points be equalled with a weak one."

THE OPERA GLASS FOR FOCUSING.

In the *St. Louis Photographer* for February, we notice an article with the above title that we are glad to be able to quote. Far from sneering at Mr. St. Clair, the author of the paper, we are very much pleased to know that the idea of using an opera glass had been thought of before, and we are sure that the late Mr. H. T. Anthony would have been one of the first to say,

"Let him who merits, bear the palm."

"In the BULLETIN for December, 1884, there appears an article by W. E. Partridge, in which the claim is made for the late Henry T. Anthony that he was, at the time of his death, experimenting with the opera glass as a help to focus the sitter in the photographic studio, the inference being that he was the first to suggest the idea.

In the summer of 1858 I fitted up a solar room in the attic of my studio, on James street, Hamilton, Ont. I used a reflecting solar instrument of home manufacture. I found it difficult to get a sharp picture, and to assist in fixing correct focus I used an opera glass, which enabled me to produce prints as sharply defined as contact prints.

Burned out in October, 1859, I lost everything; and in the spring of 1860 I emigrated to Rochester, N. Y., where I became operator in the Arcade Gallery, P. B. Appleby, proprietor and stock dealer. Using a Woodward reflector, I produced life-size solar photographs, which Messrs. Griffin and Squires, who were solar photographers for the trade, refused to believe were veritable solars, insisting that it was impossible to produce such prints by that process. Retouching was not then thought of, but I succeeded in convincing these gentlemen that mine were really solars, by showing where I had amended the negatives by the use of the sable pencil and India ink, the alterations showing faintly in the prints.

I used the opera glass in O. P. Palmer's studio, Erie, Pa., where I was partner for some time in 1862–3 We both tried it in the studio proper, but found no advantage in its use there. At the suggestion of a physician, whose name I cannot recall, I had previously tried it in the operating room in my gallery at Hamilton, Ont. In 1866 I bought out an old gallery at St. Paul, and in 1868 I fitted up a new one. I have used the opera glass, as before, for focusing solars. A Mr. Gilbert, a portrait painter, came to St. Paul, and I saw him using an opera glass *reversed* for studying the lights and shadows of his sitters. The idea appeared to me an improvement on my experience, as the figures appeared small, very sharp, and removed to a great distance. In this reduced picture lighting is much more brilliant, and the effects of the lights and shadows more marked than they appear to the naked eye. For nearly a year I looked at every sitter through my *reversed* opera glass before focusing my camera; fixing the line of sight, and adjusting lighting and drapery, before even placing the camera. By reversing I mean placing the object glass to the eye, and eye glass toward the sitter.

I continued to use the opera glass in this manner until it was stolen out of the operating room."

BETTER PRICES AND CARBON PICTURES.

IN a recent issue of *The Photographic Eye* we notice the following timely suggestions upon the above subjects. There is no doubt that carbon pictures are as beautiful as those obtained from silver when proper care is taken in the manipulations of the process; and in the matter of durability carbon is beyond question the best element known, The writer in the *Eye* says:

"As the price for ordinary photographs has had '*the bottom knocked out*,' would it not be opportune to make carbon prints which would command better prices?

Take, for example, those cities where carbon prints have been made for some years, Boston, New Orleans, and many smaller cities, St. Johnsbury, Vermont, Plattsburg, N. Y. In the last two carbon has been successfully worked for many years by two old veterans—Clifford of the former, and Howard of the latter. Wherever carbon prints have been sold they always obtained good prices.

We believe that Allen & Rowell, of Boston, always charged $12 per dozen for cabinets printed in carbon, when for silver prints from the same negatives they did not get more than half that price. Lilienthal, of New Orleans, who perhaps has done the largest business in the United States in carbon prints, always charged more than double what he did for silver prints Carbon prints are more difficult to make, consequently are worth more. They certainly make a much finer portrait when well made than a silver print.

Some Eastern houses are beginning to pay some attention to carbon. One of our correspondents in the State of New York tells us he cannot get some of his customers to order anything but carbon prints.

We are informed that a prominent Brooklyn photographer thinks seriously of devoting himself to carbon prints."

In connection with the foregoing suggestions we would remark that we have recently noticed in one of our foreign exchanges, that carbon pictures are so much in demand that one firm has made a specialty of this class of pictures and is kept busy, doing nothing else.

We should be glad to see this branch of the art revived here, and feel sure that good work of this kind would find its reward amongst those who patronize artistic, rather than cheap and commonplace productions.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

AN EVENTFUL LIFE.

BY A. BOGARDUS.

IN the year 1864 I had a young man named Charles S. Baker in my employ. A few days ago a man with white hair called on me, and asked me if I remembered him. I at once recognized the fact "once a *boy* now a *man.*"

Something of his history may be interesting.

His life has been a most eventful one, marked by strong incident, danger and exposure.

He left Saratoga at the age of 12 years, and obtained a position as cabin boy on a vessel which touched the coast of Africa, and made his way a long distance alone into the interior, until he reached a settlement of savages, among whom he lived many months. He was a genuine wonder and curiosity to them, inasmuch as they had never before seen a white person. After a time he made his way back to the coast, hailed a ship bound for China, and in 1856 enlisted as drummer boy in the war between England and China, in which the United States sloops-of-war *Portsmouth* and *Dale*, commanded by Commodore Armstrong, and between three and four-hundred men, found it expedient to take an active part. In the principal engagement upwards of 15,000 Chinese troops were garrisoned in four forts. Our vessels first shelled and afterwards stormed the forts. The Chinese were repulsed with terrible slaughter, no prisoners being taken. The forts were blown up.

At the close of the war he visited most of the principal points of interest throughout Europe and Asia, returning to the United States in 1858. On the breaking out of the rebellion he enlisted in the cavalry service, and received several ugly wounds which nearly cost him his life. Since the war he has passed most of his time among the several tribes of hostile Indians in the great northwest and in Old and New Mexico.

Mr. Baker is a photographer, and for the past five years has followed it very successfully. We have examined a large collection of his views, many of which are of ruins of prehistoric interest. His pictures of several of the most prominent Indian chiefs, including friendly Old Chief, Washakie, of the Shoshone tribe, are exceedingly fine.

There are probably but few men who have become more familiar with the habits and condition of Indian life.

He also showed exceedingly interesting pictures of war-dances, scalp-dances, etc. After visiting relatives and old friends in this part of the world he, with his daughter, returned to his "Indian friends." As may be supposed, he relates many thrilling events *on ship*, *in Africa*, *in China*, and in the late war.

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FOREIGN NOTES.

[From our London Correspondent.]

Intensification of Gelatine Negatives.—Intensification is one of the main questions of the time, as, however carefully one may work, negatives far too thin for printing purposes will occasionally be produced. At the present time but few persons would think of attempting to reinforce a gelatino-bromide negative with any one of the silver depositing intensifiers of the kind so long used with wet plates and occasionally spoken of as being suitable for the gelatino bromide film. To successfully intensify a gelatino-bromide image, one must bring about a series of reactions, which cause new matter to be added to the image *in the film*, and not endeavor to pile up new material *on the film*, as when a wet collodion negative is re-developed. In other words, the operation by which intensification of a gelatine plate is generally intensified is one or more definite chemical reactions, made with the view of adding material to the silver forming the image. In spite of the outcry against mercurial intensification, it is now almost invariably adopted in England, although the details are somewhat varied according to circumstances. When a gelatino-bromide negative is immersed in a solution of mercuric chloride the silver of the image becomes converted into chloride, and by the partial removal of chlorine from the mercuric chloride, the insoluble mercurous chloride or calomel is formed in the image, the picture being at this stage physically denser, although optically thinner, owing to the whiteness of the materials forming it. The old plan of treating the whitened image with ammonia is now almost out of use, it being far more advantageous to reduce both the chloride of silver and the sub-chloride of mercury to the metallic state by soaking the whitened plate in the usual oxalate developer, a thorough washing being all that is required in the way of subsequent treatment. Modern investigations have given us a wide choice of variations on the above method. Let us suppose, in the first place, it is judged that too much density will result from treating the whitened image with oxalate developer. In this case, the whitened image is immersed in a bath compounded of equal parts of saturated solution of sodium, sulphite and water. If the image is now too dense, it can be reduced by immersion in weak cyanide of potassium. Let us suppose, on the other hand, that after treatment with oxalate developer or with sulphite, the image is considered to be not dense enough. The uranium intensifier may now be brought into use with advantage, as pointed out by Mr. H. Chapman Jones, in a recent number of the *Photographic News*, and he gives the following very practical directions. Insisting, as will be seen, on the importance of removing every trace of sodium sulphite from the negative before proceeding to the use of the uranium intensifier, Mr. Chapman Jones says:

"The uranium method of intensification must not be proceeded with till every trace of sulphite is removed from the film, or fogging will certainly result. Allowing to soak for, say, five minutes in each of about six changes of water will probably be sufficient washing; but a more certain method is to wash rather less thoroughly if time is an object, then to soak for about ten minutes in water to which ten to twenty drops of the ordinary peroxide of hydrogen has been added. This converts the remaining sulphite into sulphate, which is without effect on the after processes. Change the soaking water two or three times after the peroxide of hydrogen, and then lay in the uranium solution.

"The uranium nitrate solution may contain from one to two per cent. of the salt, or a stronger solution may be kept, and a few drops added to the bulk of water required, till the yellow color is visible.

"The ferricyanide of potassium should be kept solid. For use, take a crystal or two the size of a pea, and wash them in a current of water for a few seconds till they are perfectly clean and of a clear ruby color. Then put a dram or so of water upon them, and agitate till the water is yellow. Pour the solution so obtained into a developing cup, add to it the uranium that has been soaking the film, and re-apply. Do not hurry the action, but add more ferricyanide solution as required. When the action is complete, wash as usual.

"If the action of the uranium intensifier does not go thoroughly through the film, the detail in the shadows will be fully intensified, while the high lights will only be partially intensified. The brown ferricyanide of uranium may be entirely removed from a negative by a dilute solution of carbonate of ammonia. This may save a negative that has got fogged with the uranium intensifier, *if the uranium has acted only slightly*. Where it has acted thoroughly, a mere ghost of the picture remains, unless the uranium intensifier has been preceded by the mercury and sulphate process, when the image remains as a white mercuric salt. This may be blackened with ammonium sulphite, but such procedure is not practically useful."

The Club System for Portraiture.—In most of our large towns, a very large trade is done by sending out agents or travelers who take orders for portraits, the payments to be made by a series of small sums which are collected weekly by the agents. This kind of business is rather low, and as a rule the portraits supplied by the "Club" photographers are painted or colored photographs of by no means an artistic nature, consequently, those photographers doing a more legitimate trade are anxious to clear out the "clubbists" at any cost, and they succeeded tolerably well in a large Yorkshire town by the following ruse: Bills were circulated in the joint names of three of the principal photographers of the town, offering a reward of £20 for evidence which should lead to the conviction of certain canvassers who had taken orders and received money under pretence of being their agents. The conspiring legitimatists described in this manifesto the doings of the canvassers with much skill, and contrived to give the public the notion that any person giving a canvasser money would surely lose it, or any person intrusting him with a valued portrait to reproduce would never see that portrait again. The bills containing this clever blow at the "club" photographers were posted at the police stations, plastered on dead walls, exhibited in shop windows, and freely circulated among workpeople as they left the factories. A general distrust of canvassers was the result, and the "clubbists" had to shut up shop.

Photographing on a Pine Board and its Lessons.—It is not necessary to look far afield to find surfaces which are more or less sensitive to light, and I noticed some interesting remarks on ready-made sensitive surfaces, in the course of a lecture given at a suburban scientific association, by Mr. W. R. Matthews.

The lecturer took a freshly planed deal board, placed it in a printing frame, under a negative, and told his audience he was going to change it for a similarly charged frame which had stood in the skylight for a couple of months. "Imagine the frame to be the same one," he said, "and that it has had the exposure of two months." On opening the frame there was a perfect image, showing every gradation of the negative, the pine-wood having darkened under the action of light; but, curiously enough, some parts of the grain were much more sensitive than others. "This experiment has a practical bearing on the every-day work of the photographers," continued Mr. Matthews, "as a large proportion of the paper which is used as a basis for transfer paper in the carbon process and for coating with emulsions is either made from woodpulp or contains a notable proportion of woodpulp. In ninety-nine cases out of a hundred this wood paper darkens to a notable extent by prolonged exposure to light, hence many of the reports one hears about carbon prints fading." "Still," he continued, "it is not the actual fiber that is so sensitive to light, but the incrusting matter which surrounds it; and if the wood paper-pulp is perfectly freed from this incrusting matter, it is as unalterable in the light as the very best rag-pulp. Fortunately, there is an excellent test for the sensitive incrusting matter of the pine-wood fiber, and I will show you how the test is made. Here is," he continued, "about a drachm of commercial aniline; on it I pour a couple of drachms of hydrochloric acid, and I dilute the hydrochlorate thus formed with four ounces of water. If a slip of pine wood is dipped in this solution and exposed to the air for a minute or so, it becomes bright yellow, as you see, this being due to the incrusting matter of the fibers reacting with the aniline."

Mr. Matthews then dipped a number of slips of paper into the aniline solution, and on removing them, it was found that some of them rapidly acquired a yellow tint, these being samples that had been made with imperfectly cleaned woodpulp.

Printing by the Electric Light.—Excellent as are the results which may be got on the development paper which has lately been introduced in the market here, but few photographers are using it as a regular thing; and with a view of balancing the shortness of the days or the dullness of the light, there is much talk of the electric light for printing purposes; but in this case the talk somewhat overbalances the actual deed. Judging from the experiments made by Herr Himly in Berlin—and these experiments are in the main confirmed by trials made in London—it appears that by using an arc light of 1,000 candle-power and a white reflector behind the light, one may get a print on ordinary albumenized paper, at distance of a yard from the light, in about the same time as would be required in good winter sunlight. Still, the prints thus obtained appear to have less body in them, and to suffer more during the operations of toning or fixing than is the case with prints made by daylight.

The Petroleum Lamp as a Source of Light for Printing.—I need say nothing regarding the petroleum lamp as a light when prints by the development method are required, but it is not generally known that it is just possible to get a print on ordinary albumenized paper by the light of a paraffin lamp. With a good two-wick lamp and a moderately dense negative a satisfactory print was obtained in ten hours by placing the printing frame at a distance of seven inches from the flame.

The Photo-Cyclist in Winter.—I have several times alluded to the advantage of using the tricycle as a vehicle on which to take out the camera, and in connection with this subject I find some excellent remarks in an article which Mr. Henry Stoomey (editor of the *Cyclist*) contributes to the *Photographic News*. Mr. Stoomey says:

"A clear day, a hard frost, with perhaps a trace of snow on the surrounding landscape, will give—save the shortness of daylight—almost all that both photographer and 'cyclist can desire, and the ride through the clear, crisp, bracing air to the place of action will be immensely enjoyed, whilst at the same time most charming pictures of nature in winter's garb are secured.

"In following out the combined pursuits on such a day, I would, however, utter a word of warning to the photographer. Let him not be led by the exhilaration induced by the ride to neglect the caution of wrapping up whilst working his camera. The body gets pleasantly heated, and the rider is apt to think he will be quite safe in getting his apparatus in order and taking the desired view without further care for himself; and, indeed, will probably rather congratulate himself on the pleasant warmth the tricycle work has given him. It will be a mistake, however, and he should not neglect to put on a light scarf, turn up his collar, button his coat more closely around him, and I would even recommend the slipping on for the time being of a broad flannel body-belt, for photo.-taking is by no means active work compared with 'cycling, and the heat of the body becomes rapidly reduced. I give this advice as the result of painful experience, as my sister, who accompanies me on many of my 'cycling photographic expeditions, is even now but slowly recovering from a severe illness induced by a cold resulting from a neglect of this precaution so long ago as last November.

"For all-round work in winter time a good strong machine will be wanted—I am speaking essentially of the tricycle. It will be of little use unless a 'double driver,' and the larger the wheels in moderation the better. The tires should be thick, and care always taken to see that they are securely cemented to their rims, for winter work tries tires terribly.

"A good frost, however, as I said before, finds both cyclist and photographer full of enjoyment. Unless the frost follows immediately on 'sea of mud,' the roads will be hard, dry and in fine running order, with not even any dust to hold the wheel tires and cause extra work; and even in that case, if there be a day or two's continued frost, the passage of a few wagons will wear down the ruts and make the going even. Now, indeed, can the 'cyclist enjoy himself, for, provided he be suitably and sufficiently warmly clad, he can 'put in all he knows' till he is out of breath without becoming exhausted or more than pleasantly warm; in short, he is able to secure, by his own exercise, 'not too much warmth, but just warmth enough,' and to select some of the most charming scenes imaginable on which to bring his camera to bear.

"A storm of snow will, like distance, lend enchantment to the view, though there may be too much of this, as of every other good thing under the sun. We may have too much snow from both a 'cycling and a photographic point of view, for, from the former aspect, whilst an ordinary shower will not materially affect the progress of a good and not too highly-geared double-driving tricycle, a long continuance of a storm will prevent the 'cyclist getting through at all. A snow storm sometimes serves to improve matters rather than otherwise by covering the ruts, and fresh-laid stones, so as to render them harmless; and if a real hard frost or two follows on a medium layer of snow, a fairly good traveling surface is the result, though when the deposit exceeds four or five inches in depth the work of propulsion is rendered excessive.

"Perhaps, however, the most enchanting combination of work with the camera and the wheel in the winter time that I know of, and one which I think almost beats the best opportunities of summer work, is ice work on a river or lake. In this part of the country—the English Midlands—it is almost unobtainable, such is its rarity, but I have enjoyed it once, and have been thirsting for a repetition ever since. It wants a good three weeks of real 'black' frost to freeze the ice thick enough to bear in safety the rider and machine. I say 'in safety,' for delightful and intoxicating almost as it is, I do not think it worth the risk of attempting on insecure ice. With a good sheet of ice fifteen inches to eighteen inches thick below, and a smooth surface above, the work of propulsion is reduced to a minimum. There is not the slightest vibration or sign of a jolt. Entirely without noise, and almost without an effort on the part of the rider, the machine glides on, and as each turn of the river brings some fresh display of nature's charming beauty in frost, snow and ice to view, one feels quite undecided on which to direct the camera first, such is the *embarras de richesse* with which one is surrounded and met at each turn. Residents of less variable climes may be able to enjoy this year by year as a regular thing. Happy mortals! Do they enjoy it? I cannot say, but I certainly, once having tasted its delights, am ever desirous of doing so again, for I must repeat my opinion that work on the frozen river is the *summum bonum* of 'cycling and photography in the winter."

PLEASE except our congratulations. Your new BULLETIN is in every way perfect.

Yours truly,
BURNETT & SLATTERY,
San Francisco.

ASSOCIATION OF OPERATIVE PHOTOGRAPHERS.

Mr. Duchochois Lectures continued.

BROMINE . $Br^1 = 80$.

Bromine was discovered by Balard, in 1826. It is a dark, red-brown liquid, volatile at the ordinary temperature, venenose and possessing a disagreeable and peculiar odor. It acts energetically on the organs of respiration and on the skin, which it disorganizes by producing a painful sore. Liquid ammonia combines directly with bromine, and should be used to neutralize the corrosive action of the liquid or that of its fumes.

Bromine is soluble in alcohol. Ether dissolves it in all proportions, and water only to the extent of about 3 per cent. It combines directly with several metals, zinc, iron, cadmium, silver, etc., and has for hydrogen a great affinity, less so, however, than chlorine, which displaces it from its combinations:

$$K\,Br + Cl = K\,Cl + Br.$$

Like chlorine water, the aqueous solution of bromine is permanent in the dark, but under the action of light it decomposes water in uniting with the hydrogen.

$$\underset{\text{bromine,}}{2\,Br} + \underset{\text{water.}}{H_2\,O} = \underset{\text{hydrobromic acid.}}{2\,H\,Br} + \underset{\text{oxygen.}}{O}$$

Bromine is easily detected by its fumes and odor, or by starch paste, which it tinges orange-yellow.

HYDROBROMIC ACID. $H\,Br = 81$.

Hydrobromic acid is an incolorous gas, very soluble in water which possesses most of the properties of hydrochloric acid. The metalloids, chlorine excepted, have no action upon it, but many metals decompose it in displacing the hydrogen.

Hydrobromic acid is best prepared by the action of bromine on phosphorus. One part of *amorphous* phosphorus* and four parts of water are placed in a flask (Fig. 5), and 10 parts of bromine added drop by drop at first, for the reaction is exceedingly violent.

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*The preparation of hydrobromic acid with the ordinary phosphorus is so violent that accidents happen even in taking the greatest care.

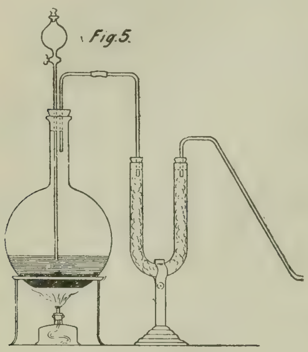
Fig. 5.

When all the bromine is added, the solution is moderately heated and the hydrobromic gas is collected in water after passing through amorphous phosphorus, mixed with broken glass, which absorbs the excess of bromine. The reaction which takes place in this operation is represented thus:

$$P''' + 5Br + 4H_2O = H_3PO_4 + 5HBr.$$

phosphorus. (triad) bromine. water. phosphoric acid. hydrobromic acid.

Hydrobromic acid is also prepared by passing sulphureted hydrogen through bromine in water.

$$2H_2S + 10Br + 4H_2O = H_2SO_4 + S + 10HBr$$

sulph'd hy'o'n. bro'ine. water. sulphuric acid. sulphur. hyd'br'c acid.

The bromides are prepared by the direct action of bromine on metals, or by double decomposition with basic oxides and carbonates of metals such as potassium, sodium, etc., and also, as said above, by the action of certain metals, zinc, cadmium, etc., on hydrobromic acid.

$$Zn'' + 2HBr = ZnBr_2 + H_2.$$

The bromides are soluble in water, with the exception of lead, mercurous and silver bromides.

Heated in a test tube, with acid potassium sulphate or a mixture of manganese dioxide and sulphuric acid, the bromides are decomposed and bromine evolved.

A bromide solution, decomposed by chlorine, $HBr + Cl = HCl + Br$, takes a yellow-red color, which disappears by addition of ether; the ether dissolving the bromine in being tinged deep yellow.

The mercurous nitrate $H_2(NO_3)_2$ forms with the bromides a yellowish precipitate Hg_2Cl_2; lead acetate, a white precipitate, insoluble in water; and palladium nitrate, which forms no precipitate with the chloride, a black precipitate. These reactions which are quite distinct from those formed by these re-agents with the chlorides are characteristic.

IODINE $I^1 = 126.5$.

This metalloid was discovered in 1812 by Courtois in the mother waters of sea-weed-ashes treated by sulphuric acid.

Iodine is a bright crystalline body, of a blue-black metallic color. It slowly volatilizes at the ordinary temperature in emitting red-violet fumes, possessing a peculiar and pungent odor.

Iodine is soluble in 5 524 parts of pure water, but very soluble in alcohol and ether, or in water containing ammonium chloride or nitrate, some iodide or hydriodic acid. It does not decompose water under the influence of light; attacks organic matters in displacing the hydrogen, and tinges yellow the skin, which it disorganizes by prolonged contact.

The chemical properties of iodine are similar to those of bromine; it combines directly with most metals, but its affinities are weaker than those of bromine and chlorine, which displace it from its combination. One of the most remarkable properties of iodine discovered by Niépce de St. Victor is that of condensing on the blacks of an engraving to the exclusion of the whites, thus: When an engraving is exposed to the fumes of iodine for about ten minutes, and then placed in contact with a sheet of paper coated with starch, a perfect reproduction is obtained, possessing all the purity of lines of the engraving. This blue proof in iodide of starch can easily be converted into a negative by well-known means.

The best re-agent for the detection of iodine is starch paste, which it tinges blue. The property inherent to iodine alone is characteristic.

HYDRIODIC ACID $HI = 127.5$.

This acid is an incolorous gas, fuming in the air, as all the hydracides, and very soluble in water. The solution, in contact with the air, takes a brown color, due to the decomposition of part of the acid by oxygen; water is formed, and the iodine liberated dissolves in the solution. This color almost disappears afterwards by the subsequent action of oxygen, which unites with the hydrogen of the remainder of the acid, and ultimately sets the iodine free:

$$(HI)_2 I + O = H_2O + I_3$$

Chlorine and bromine decompose hydriodic acid in uniting with its hydrogen, $HI + Cl = HCl + I$. The affinity of iodine for hydrogen is therefore less energetic than that of these two metalloids, but it seems to be greater for oxygen, since iodine displaces chlorine from potassium chlorate in forming potassium iodates. Hydriodic acid is decomposed by sulphuric and nitric acids, but not by hydrochloric and bromhydric acids.

Hydriodic acid is prepared like hydrobromic acid; the reaction of iodine with sulphureted hydrogen and phosphorus being identical, but not so energetic. With phosphorus the acid is obtained by adding, little by little, twenty parts of iodine to one part of amorphous phosphorus under water, and then heating carefully the solution.

The iodides are prepared, 1st, by the direct action of iodine on metals; 2d, by the action of the alkaline oxides and carbonates on iodine. In this reaction both iodides and iodates are formed:

$$I_6 + 6KHO = 5KI + KIO_3 + 3H_2O$$

iodine.	potassium hydroxide.	potassium iodide.	potassium iodate.	water.

3d, by the action of a soluble sulphate on calcium or barium iodide obtained from hydriodic acid. This method is recommended by Liebig to obtain pure iodides;

$$Ba\,I_2 + NA\,2\,S\,O'_4 = 2NaI + Ba\,S\,O_4$$

barium iodide.	sodium sulphate.	sodium iodide.	barium sulphate (insoluble).

The iodides of the alkalies, and of the alkaline earths, the iodides of zinc, cadmium, iron, etc., are soluble in water. Chlorine, bromine, nitrous acid, decompose all the iodides. When they are soluble the solution is discolored red-brown, if not, red fumes are evolved.

The iodides can be detected by the violet fumes of iodine evolved from the iodides, heated in a test tube with a mixture of sulphuric acid and manganese dioxide, or by their precipitate with palladium chloride, lead acetate and mercuric salts. *Palladium chloride* forms a black precipitate, $Pd.\,I_2$, but is without effect in bromide or chloride solutions. With *lead acetate* the precipitate is orange yellow, and soluble in hot water and nitric acid. With the *mercuric salts*, corrosive sublimate, the precipitate is scarlet and soluble in potassium iodide. To detect minute traces of iodine, a part of the solution is mixed with starch paste, slightly acidified with sulphuric acid, and only one drop of chlorine water if added. If the solution contains any iodide the starch paste is at once tinged blue from the formation of iodide of starch.

As to the detection of chlorine, bromine and iodine in a compound, the following simple and effective method, given by Mr. Francis Jones, will be found very convenient to photographers and students: "Place a small quantity of the mixture to be tested in a good-sized test-tube; add a few pieces of manganese dioxide, and then a little water; add now *one* drop of dilute sulphuric acid (one part acid to ten of water); a brown tinge indicates the presence of iodine. Boil the mixture, and confirm the presence of iodine by the violet vapors in the upper part of the tube. Continue the boiling till these vapors cease to appear, then add another drop of dilute sulphuric acid, and boil again till they cease. If necessary, repeat this addition of acid and boiling until violet vapors have entirely ceased. Now add about two cubic centimetres (34 minims) of the dilute acid and boil again; brown vapors indicate bromine. Continue the boiling until the vapors no longer smell of bromine; then add one cubic centimetre dilute acid and boil again. When the vapors no longer smell of bromine, allow the residue to cool *completely;* add an equal bulk of *strong* sulphuric acid, and warm; a green gas, bleaching a piece of moist red blotting paper at the mouth of the tube, indicates chlorine. Occasionally some bromine comes off on addition of the strong acid, but it is soon got rid of, and is succeeded by the chlorine, which is chiefly evolved on warming the mixture. As, moreover, moist red blotting paper is far more quickly acted on by chlorine than by bromine, there can be no difficulty in distinguishing between the two elements."

(*To be continued.*)

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ROCHESTER PHOTOGRAPHIC ASSOCIATION.

AT a meeting of the Rochester Photographic Association, held at their rooms, February 9th, the following questions were discussed.

Question 1st.—Does varnishing a dry plate negative facilitate printing?

Question 2d.—When is the proper time to spot our prints, before or after burnishing?

Question 3d.—What is the best lubricator for photographic prints, and how shall it be properly applied?

MR. POMEROY said, in answer to the first question, that, as far as his experience had gone, it did not facilitate printing to varnish a dry plate negative; it is a surface to protect the film and it certainly would not facilitate the printing, as it would not make the negative print more rapidly; it is a very thin coating. I have never seen any varnish so transparent that it would not hinder the rays of light passing through it to a certain extent.

Mr. Lee thought there could be no question about it, as it is only another medium for the light to go through.

Mr. Knapp stated that, in his opinion, the varnish would make a wet plate print quicker.

Mr. Larned said that varnish to a certain extent reduced the negative.

Mr. Knapp asked if a negative was varnished in spots, would it print in spots?

Mr. Lee thought that would be a good test, for if the spot is lighter or darker than any other part of the print, that would be a test.

Mr. **Larned** said he had seen a negative where a light line in the background had been perfectly retouched dry and yet would print light after varnishing; that seems to me as if the varnish reduced the negative.

Mr. Lee said it was possible, when the varnish is first put on, the negative may appear reduced, but when it dries in, you would find it different.

Mr. Knapp said his experience was just the reverse that he retouched his negatives before varnishing them.

Mr. Fox remarked, in reply to the second question—I suppose there will be more or less spots come on a negative. I think the spots should be removed before burnishing. I have had very good success in doing so, and have never had the least trouble with spots showing after burnishing, if they had been well touched out before burnishing.

Mr. Lee thought Mr. Fox's theory correct, that the spots should be removed before burnishing.

Mr. Larned, in answer to the third question, stated that in his experience dry Castile soap, applied with a canton flannel pad, he had found to be the best lubricator. A great many recommended using it in liquid form; but in tinted cards, I think it is liable to show streaks on the edges of the print, unless you are careful in applying it.

Mr. Fox asked Mr. Larned if he rubbed the card that was to be copied? He said he did; and if you do not, it is apt to drag on the edges of the card.

Mr. Knapp thought that depended upon whether the print was dry or not.

Mr. Larned said care should be taken in the amount of soap used, how it was applied and the heat of the burnisher.

Mr. Lee said the most difficult kinds of mounts to burnish are those called "bottle-green." I have seen a burnisher so hot that it would drag a bottle-green mount every time, while an ordinary one would burnish in good shape with that degree of heat. I think there is more pigment in the bottle-green mount than in the primrose or light-colored ones.

Meeting adjourned.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

A special meeting of this Society, devoted entirely to the exhibition of lantern slides, was held at their rooms, 1260 Broadway, on Tuesday evening, February 24th, at eight o'clock.

The new lantern constructed for the Society was used for the first time, and gave a large and well-illumined screen. The lantern designed by Mr. Beach, is so arranged that 4x5 and 5x8 plates can be inserted in addition to the regular lantern size.

The President announced the subjects and makers of the slides as they appeared upon the screen, and Mr. H. V. Parsell, Jr., manipulated the lantern.

A large number of slides sent by the Cincinnati Camera Club were first shown. These comprised views of steamboats and scenery on the Mississippi and Ohio Rivers, views in Cincinnati during the great floods, and in the vicinity of the city under more favorable conditions. Several slides by Mr. Bullock were noticeable from the fact that he himself was included in the picture, exposure having been effected by a shutter on the "Cadett" principle, actuated by pressure of a bulb held in the hand through a long and fine rubber tube. A view in the hunting field, showing the dogs in the act of "pointing" and the sportsmen ready to shoot, was particularly good, needing only the birds to rise and be shot to make it complete. Other slides were of scenes around Lake George.

These slides were principally from negatives of Messrs. E. J. Carpenter, Geo. Bullock, Carson, Rochester and Frome. The slides were divided between the wet and dry processes.

The work of members was then introduced.

Mr. **Randall Spaulding** sent some views of Montclair, also of Arizona and New Mexico.

Mr. **Neefus** showed a dozen copies from engravings and photographs, which were exceedingly well done.

Dr. P. H. **Mason**, of Peekskill, showed views of the State Camp at Peekskill, and a schooner opposite the Highlands of the Hudson, good specimens of this class of work, although some were a little too dense for the light used.

The finest work of the evening was unquestionably that of Mr. Brush. His slides included views in the White Mountains, of which one was the "Notch," and that of the profile face called "The Old Man of the Mountain," were especially excellent; several views in Watkins Glen and in the vicinity of Fortress Monroe. Of these latter the "Virginia Creeper," a country cart "steered" by a sun-bonneted female, and a discontented-looking ox harnessed between the shafts, was good in every way; and another, entitled "A Dark Subject," was a portrait in easy attitude of a "berry black boy," and called forth laughter and applause. A superb slide of Trinity Church, Boston, should also be mentioned.

Mr. BRUSH also showed a few reproductions from foreign slides, which, to all appearances, were quite equal to the originals. Mr. Brush uses both the albumen and chloride plates. The latter gave very pleasing results, as also in the case of three slides by the President. These had a peculiarly warm tone, illustrating the range of color obtainable with these plates.

Mr. BEACH spoke of the ease with which slides can be produced on chloride plates, and advised members to try them. He used the developer as recommended, only diluted with an equal amount of water.

Mr. MAPES sent a few views of scenes on the Long Island shore and a good shutter picture of a lawn-tennis game.

Some slides by Mr. Cullen, of yachts racing, elicited applause, and were uncommonly good.

A set of views of the New Orleans Exposition, made by the wet process by Mr. W. H. Rau, of Philadelphia, was then shown, and the entertainment was brought to a close owing to the lateness of the hour.

Over two hundred slides had been shown, and the supply was then not exhausted. The slides left over will doubtless furnish material for a future meeting.

Credit is particularly due to Mr. Beach for his energy in getting the lantern completed in time to be used, and also to Messrs. Parsell and Robinson, of the Committee of Arrangements, for securing and arranging the slides.

There was a large sprinkling of ladies in the audience, and it was the universal verdict that the first exclusively lantern meeting was a success in every way.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

NEW YORK, March 2d, 1885.

President NEWTON in the chair.

The Secretary announced the receipt of the following: ANTHONY'S BULLETIN, *Photographic Times* and *The Photographic Eye*, current numbers; a copy of *The British Journal Almanac, The Photographic Year Book*, also the November, December and January numbers of the *Journal of the Transactions of the Photographic Society of Great Britain.*

The President called for the report of the Executive Committee.

Mr. Gardner reported that the Executive Committee had the pleasure to announce that Dr. L. H. Laudy would give his lecture on "Phosphorescence and Fluorescence" as already provided for. At the next regular meeting of the section, Mr. J. Traill Taylor would give them a paper, the subject of which he could not announce, as Mr. Taylor had not given him any title yet.

Mr. Gardner then read a paper on "Talks with Photographers by an old Daguerreotypist."*

The President then stated that Prof. Laudy's* lecture was next in order.

After the close of the lecture, the President announced "that any questions or suggestions on the subject of the lecture were in order.

On motion of Mr. Mason, a vote of thanks was unanimously tendered Prof. Laudy.

President NEWTON—This subject, or the subject of light—the subject of the lecture—considered from any standpoint, scientific or otherwise, cannot help but be intensely interesting, especially to a mind that is inclined to investigate the phenomena of nature. There is nothing in nature more wonderful than light, and the organ of vision, or the eye, by which we see the physical objects around us. Now this spectrum that we talk about, where we divide the solar ray into numerous individual rays, we find there are what are called the "rays of vision," the rays by which the chemical part is performed—that is actinic. The other is the visional ray. The visional ray is not actinic. It does not perform the actinism. This violet light, if it was made more powerful, would illustrate the point. If I should take a glass cell, partly filled with water, and then fill the cell with bisulphide of carbon, and into that put a little iodine, I would get an intensely violet color. It would absorb from the solar ray every part of the visional rays, without seriously affecting the actinic rays. To try that experiment, take such cell and place it—after fixing the object you want to photograph, let it be a steel plate or anything that will make a sharp picture—place the cell in front of the lens, and upon looking into the camera you will find it is as dark as if you had put the cap over the lens. If you expose a sensitive plate it will photograph the picture as quick as if it was given light. Those working in that direction would find this a very interesting experiment Prof. Laudy's remarks about the invisible made visible, brought this matter to my mind.

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*Will be fully reported in our next issue. As also will Dr. Laudy's lecture.

PROF. LAUDY—There is one other experiment I meant to make, which I will exhibit now. Here are three bottles, one contains water, one an acid solution of sulphate of quinine, and the other black ink—the point being that it is quite hard to distinguish the sulphate of quinine from the ink when photographed. That you may see this, I will show you a photograph I have here.

MR. GARDNER—How would this monochromatic light you speak of do for lighting the dark room? Would the chemicals be affected by it?

PROF. LAUDY—I should suppose they would.

The President—If there is nothing further on this subject, or anything more to be said, we will pass to the next thing in order. I don't know that there is anything to exhibit here to-night. But the subject calls to my mind a lens which our Secretary, Mr. Mason, exhibited at the last meeting. His representation of the lens made it rather an extraordinary instrument, to my mind, if it would perform as he assured us it would. I do not put the *if* in, because I have my doubts about the integrity of our Secretary. I asked him to inform himself a little further in reference to that lens and report; because if it is true that a lens as simple as that has the power of performing as he states it would, I do not know of anything that photographers would be more interested in, or do I know of anything that would be more useful in the present state of science and art. I call on Mr. Mason to know whether he has informed himself so as to answer the questions I propounded to him at the time he exhibited the lens.

MR. MASON—I did not expect to say anything about that lens to-night. I will say that the lens was so satisfactory in appearance to the first gentleman I showed it, that he bought it, and it has gone out of my possession. I have since received from the maker another which I think is better than the first. I think the lens is a remarkable lens. I have had two interviews with the maker, who states to me that he has come to the conclusion that photographers can have lenses of the first quality at a good deal less price than they have been paying. He gives me some pretty good reasons for believing that he is going to furnish a lens which will be first-class in every respect. He tells me that he shall use nothing but the best optical glass, while plate glass is being used by many manufacturers. Another point which he lays considerable stress upon is the polish. He proposes to use a polisher that is used for polishing lenses for microscopes and stereoscopes. He proposes to use great care, such as is used in making lenses for the highest class of optical instruments. The production may be at first somewhat limited, but they will be in the market in a month.

MR. GARDNER—Some time ago I spoke of the difficulties in cleaning dry plates, and there were some of my hearers that were doubtful as to whether I had followed the right formula. I have brought with me to-night one of the glasses, and you can visibly see the image on it. That glass has been subjected to a variety of processes in order to cleanse it, that it might be fitted for use, but the image of the first picture still remains to a certain extent on it, and it will become more distinct if you attempt to develop it for another picture.

The President—Was there a picture there, Mr. Gardner?

MR. GARDNER—Yes, sir. There was a picture of some trunks. You can see there was something there.

The President—But whether it was ever a picture or not is a question. How was it cleaned?

MR. GARDNER—The first cleaning was according to the directions of Mr. Beebe; but I found the plate was not clean, but had the remains of a picture on the glass. Having several of the same kind, I took some of the others and subjected them to a solution of potash hot. I found that that was not effectual. I then subjected them to a solution of nitric and sulphuric acid, neither of which removed the picture. On Saturday last I subjected them to a solution of bichromate of potash. I let them remain in it for twelve hours, but the impression still remained. It was thought by some persons that the cause was my imperfect attempts to clean them. I have a number of those plates, and would like any gentleman to produce a clear surface on them. I do not know whose make they are.

The President–I have taken occasion to warn photographers against the use of strong alkalies in cleaning plates—it destroys the surface. I have cleansed glass; and I have stated it one hundred times during the last hundred years. that commercial sulphuric acid is the thing to clean glass with. Take commercial sulphuric acid and pile the plates up as high as you wish, and let them lay in it over night, then wash them off clean. I have never seen a mark on them when dry, if treated in that way; but after you put them in an alkali, I have.

After some further discussion upon cleaning plates, Mr. Fiske produced a model of a drop shutter, which he submitted to the members.

The President—The question of shutters to assist in rapid work is one that has called forth many ingenious contrivances to that end. There are very few of them but what have imperfections, and consequently suggestions are in order. The sensitiveness with which we are being supplied with plates is marvelous; beyond almost imagination, much more description. In experimenting the other day with a class of plates, I took a picture with a thirteen-inch platyscope lens, about four o'clock in the afternoon, with a good light, in a gallery on Sixth avenue, which was almost directly towards the sun, and we had to open and shut as quick as possible—say probably not more than one-fifth of a second. I had to introduce a bromide to make a good negative.

Prof. LAUDY—Was it a commercial plate?

The President—I am not at liberty to say. You see, I am on that committee that only reports to the society that provided for it. The matter came to me in connection with the drop shutter.

There being no further business the meeting adjourned.

* * *

THE postmaster of this place placed No. 1, vol 16, in my box, and, after inspection, I find that you have managed to give to the fraternity, a good journal at reasonable price, which induces me to be added to your list of subscribers.

Yours fraternally,
JOHN SWART,
Nevada.

[*From the "Photographic News."*]

HOW TO PHOTOGRAPH MICROSCOPIC OBJECTS.

BY I. H. JENNINGS.

LESSON IX.—*Continued.*

WHEN the necessary transparency has been attained, and after the object has been successfully treated with alcohol and turpentine, it is ready for mounting. A solution of balsam in benzol is better than pure balsam in many ways. The solution may be prepared by "baking" pure balsam in a slow oven until it becomes quite hard on cooling, and then dissolving in benzol, or may be purchased at the shop of any optician. The insect, or part of one, is removed from the turpentine and drained, placed in position on a slide, a cover-glass placed over it, and a small quantity of the balsam solution applied to the side, when it will be drawn under by capillary attraction. By a little care air bubbles may be entirely avoided. The slide is then put aside until the balsam has become quite hard, when it may be cleaned for the cabinet, and ornamented with rings of colored varnish, as the mounter's taste may dictate.

Of late years many microscopists have objected to the "squashing" process usually employed in mounting insects, as, in many cases, it deforms and distorts the preparation almost beyond recognition; and now many amateur and professional preparers mount insects without pressure, first gaining the necessary transparency by prolonged immersion in turpentine, and finally mounting with balsam in a cell. Objects thus mounted are very beautiful, especially when illuminated with the paraboloid or spot-lens, but are somewhat difficult subjects for photography, unless a very low power, such as a five-inch, four-inch, or three-inch be employed, as great penetration is required.

It is best, when engaged in mounting insects specially for photography, not to mount indiscriminately any pretty object, but to set up a type-series, to illustrate the class *Insecta*, which, when photographed, would have a real scientific value. Something after the following style might be attempted:—

1. *Coleoptera.*—Many of the smaller species can be set up whole, after bleaching in the chlorate of potash mixture. A few feet may also be mounted; the paddle-foot of *Dyticus*, the broad-padded foot of *Timarchus*, and the type-foot of *Carabus*. Some of the antennæ, as those of *Melolontha*, are also well worth mounting and photographing.

2. *Dermaptera* (the earwigs).—A specimen may be mounted whole for a five-inch objective; if possible, with the wings expanded. This subject will not require more than a few hours' treatment with potash.

3. *Orthoptera* (the cockroach).—*Blatta Orientalis* is a good type, although not a true English insect. Almost colorless specimens may be found in kitchens which these creatures haunt. These will require no preliminary bleaching.

4. *Thysanoptera.*—The diminutive insects so abundant and so troublesome in hot summers—insects which will persist in crawling over one's face, and into one's mouth and eyes, which swarm everywhere and on everything—constitute this order. One of the largest, *Phlaeothrips coriacea*, measuring about $\frac{1}{14}$ of an inch in length, may be set up whole in balsam.

5. *Neuroptera.*—A portion of the large facetted eye of the dragon-fly may be mounted flat on a slide in balsam, and will form a very instructive photograph.

6. *Trichoptera.*—The larva of the caddis-fly may easily be prepared. The internal parts must be removed, when, after washing and treatment with turpentine, it is ready for mounting. The mature caddis-fly may be set up whole.

7. *Hymenoptera* (bees and wasps).—The wings, showing attaching hooklets, may be mounted dry or in balsam. The feet will require to be bleached strongly, as most of the *Hymenoptera* are strongly colored. The modified ovipositor, called the "sting," should be cut from the insect carefully, so as to have the poison-bag attached. The stings—for there are two—lie enveloped in a case of brown chitine, from which they may be dislodged with a fine needle. The poison-bag, owing to its extreme transparency, must be stained—not with *blue*, as in many professional preparations, but with brown. Bismarck brown is, perhaps, as good as any. Sufficient stain should be used to give this part as nearly as possible the same color as the stings.

The saw-flies show another modification of—or, rather, addition to—the real ovipositor. This consists of a sawing apparatus, composed of four saws—two small and two large ones, the former fitting into the latter. This object is rather difficult to photograph when set up in balsam, as it becomes too transparent. A well-mounted *dry* specimen will give more satisfaction.

8. *Lepidoptera* (or butterflies) are interesting from their finely-marked scales, which form tests for low powers. They should be mounted dry.

9. *Homoptera* (frog-hoppers and *aphides*).—The former possess saws, which may be prepared like those of the saw-flies.

10. *Heteroptera* (or bugs).—The "beak" of *Cimex lectularius* and the oar-foot of the water-boatman may be mounted in balsam.

11. *Aphaniptera* (or fleas).—The insects, to be successfully mounted, require a severe treatment with potash, and a long soaking in turpentine. Preliminary bleaching in the hydrochloric acid mixture is, perhaps, best to get rid of the yellow color, which renders them difficult to photograph satisfactorily.

12. *Diptera* (or flies).—The feet of the dark-colored species will require bleaching with chlorate of potash. The "tongues," or *ligulæ*, should also be bleached, but *not too much.* The proper way to mount a fly's tongue is to set it up in a shallow cell, *without pressure.* The specimens usually sold, being mounted flat, are distorted, and give an improper idea of the real shape of the organ.

For further information as to dissection, &c., the student is referred to "Practical Microscopy," by Mr. G. E. Davis.

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[*From the "Photographic News."*]

HINTS ON POSING AND THE MANAGEMENT OF THE SITTER.

BY H. P. ROBINSON.

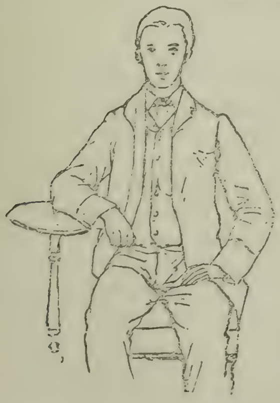
CHAPTER III.—THE THREE-QUARTER LENGTH.—MEN.

In the kind of picture we have now under consideration, there is more scope for variety of pose than in those which include the head and shoulders only. Almost every variety of picturesque effect can be brought to bear, both of light and shade and line.

The three-quarter length is generally supposed to include the figure down to the knees, but in treating of it we may fairly include a proportion that takes in somewhat less, and is more nearly a half-length.

For ordinary every-day portraiture of ordinary humanity, no great variety of pose is necessary—or, indeed, admissible. This is especially so as regards the photographic presentation of men. If you will go through a modern exhibition—for example, the Royal Academy—and take a general and comparative survey of all those pictures which used to be catalogued under the title of "portrait of a gentlemen," you will find that the variety in the pose is very limited. This is due in a great measure to the restraint that modern dress imposes on the artist. The masculine coat and trousers of to-day do not admit of artistic arrangement, and any attempt to alter them savors of affectation. Adam-Salomon's black velvet cloak was very picturesque as arranged by his artistic hands, but it looked out of place on a Manchester merchant or a bookmaker. Some of our best portrait painters seem to have given up all hope of varying the positions of their sitters, and seat them all, with rare exceptions, in the same chair in endless succession. I do not state this for the photographer's imitation; he had better always strive for improvement, and not give up all effort as the painters seem to do when they are elected into the Academic body, but as some little comfort for him when his efforts to become original fail.

Photography has done much to teach the painter. There can be no doubt that our art has greatly improved portrait painting. When photographers began to take portraits, portraiture in paint was at its lowest ebb; it is now at its greatest since the time of Gainsborough and Reynolds. Our art has been especially useful in teaching the painter what to avoid; it has completely abolished the column and curtain. I don't think this once inevitable background has been seen in the Academy Exhibitions for several years. It has taught him how to give individuality and character. In every portrait painter's work, before the introduction of photography, one face was very like another, and it has taught him that conventionality is only to be tolerated in decorative work.



But if there is very little variety open to the operator in his portraits of men, there is one posture that I should like to see entirely discarded, and never used any more. This pose is hallowed by tradition, and sanctified by use, for it has been the one pose of photographers since the morning twilight of the art. It is the pose with which the amateur begins; with which the professional, however capable of art knowledge, commences, and with which the incapable spends all his days. I give it here as an example of what to avoid.

Who does not know, who has not been guilty of, this pose, in which the victim appears to be laid out and trussed, little round table and all? But it is all very well, the young photographer will say, to tell me what to avoid—destructive criticism is always easy; but I want to be told what to do. I can only reply by again resorting partly to pointing out what to avoid.

Let us take a portrait. The subject is a gentleman of any age between twenty-five and fifty; he wants a standing portrait. To begin, make him stand in as easy an attitude as possible; don't dictate to him how he shall stand at first, but let him take his own position, and use his suggestion if good; alter it a little if necessary, but don't "mess the figure about." If it does not easily "come," make him walk away and try again. It is possible he may have an idea that he ought to be upright when he stands for a picture, and will stand equally on both legs. Now, however strange it may seem, human beings seldom stand on both legs at once, except in their first and second childhood. Infants and very old men *toddle* equally on both feet. Between these ages a person, when standing at ease, rests on one leg, and in walking it is one or other leg alternately that bears the burden. By this means nature gives variety of line, and avoids the uniformity it abhors. In posing a man, strive to get sufficient variety to give picturesqueness. Do not let the head be in exact line with the body; if the figure is turned full, let the face be in three-quarter view; if the figure is slightly turned away, the face may be full or in profile. See that there is variety in the figure; do not let the hands appear as two spots exactly opposite each other on both sides; do not allow uniformity in the furniture and accessories; for instance, if there is a chair on one side of him, it would be better not to have another on the other side. I do not like to speak too definitely, for fear of cramping the operator instead of helping him; and I can quite conceive cases where exactly the reverse of what I have recommended would be exactly what was wanted. If possible, avoid the leaning position—the pedestal and back-of-chair business has been thoroughly overdone. So much are some sitters, who often have their portraits taken, used to it, that they naturally ask for something to lean on.

"It makes me feel so easy and natural," a man will say; but is puzzled when asked if he can ever remember leaning on a pedestal, and looking like the monument of Shakespeare, anywhere but in a photographer's studio. I remember a studio, in the days of the carte-de-visite mania, where the pedestal and head-rest were fixed institutions, and every figure was fitted to them, all with their legs crossed, like Crusaders on their tombs, only upright.

To a seated figure the same suggestion for variety will apply. A man will sometimes think he looks easy when he feels so, and will slouch down in a chair, put his hands in his pockets, shrug up his shoulders, and, putting his foot up over the knee of the other leg, will present the sole of his boot as the principal object in the picture. But it is "not thy sole, but thy soul," as Gratiano says to the Jew, that is wanted in a portrait, and the lounger must be shaken up. Some young men think it looks easy and graceful to sit astride on a chair, and lean their elbows on the back. To me they look awkward and ungraceful in this position, and all I can say about it is that it is just allowable when it cannot be avoided.

Old men usually make admirable photographs. There is a gravity about old age that seems to suit photography. White hair may be a technical difficulty, but it is to be got over by judicious lighting and manipulation, and difficulty ought to lend a zest to all arts. Old people are usually steady without much effort and, as a rule, they do not care so much how they look as younger people do, and therefore are free from the self-conscious look that so sadly mars nearly all portraits, whether painted or photographed. Seated positions, in arm-chairs for preference, seem to be most suitable for age.

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I AM more than pleased with the several changes—two a month is a great improvement—and the man that designed the new dress is entitled to the cake.

In fact, I like it better all around, inside and out.

Yours truly,
JOHN ESMAY,
Iowa.

[*From "The Photographic News."*]

HOW TO MAKE THE NEW RAPID PRINTING PAPER FOR DEVELOPMENT.

BY J. B. B. WELLINGTON.

WHENEVER there is any great photographic discovery—or, in this case, I should say improvement, as it is not the first time that paper has been coated with sensitive emulsion—if it is likely to prove of value to the every-day photographer, it is sure to secure a large amount of attention; and that this is the case is shown at the various photographic societies in London. At one society Messrs. Marion & Co., the first in the field with the new printing paper, gave a demonstration of the process—that is, of developing, toning and fixing; and at another an evening was occupied in a discussion, when several members who had tried the new paper now in the market gave their experience and spoke very highly of it, and said that it would supersede the much-abused "albumenized paper" altogether; and I certainly think it will, at any rate, to a large extent. Not only shall we have a paper that is unlikely to fade (at least, Father Time alone will prove this), but we shall not be dependent on the weather, as printing can be carried on equally well by gaslight, a few minutes' exposure being sufficient, yielding a print for brilliancy and tone equal to that of a silver print. The formula I am about to describe is the only one I have experimented with, which I fortunately hit upon in the first batch of emulsion I had made for a rapid printing paper.

I may say that I have experimented now for the last twelve months with gelatino-bromide plates for lantern slides, and with these I could get any range of color, including ruby, and we know that if we have a red image to start with, we can tone that image to almost any pleasing color. But in the case of the slow bromide plates the objection was, that the image appeared red by transmitted light, but of a dull green fog appearance by reflected light, it being what is termed dichroic—in fact, it had every appearance of a wet plate; however, I cannot say if this would be the case if the emulsion had been on paper. I, however, thought that by adding a proportion of chloride to the bromide I should get over this objection, and this proved to be the case, for, on trying the first batch of paper I had coated, to my great satisfaction the image appeared red by reflected light, and when toned and fixed equaled in brilliancy that of a silver print.

On making further experiments I think it is essential to have a proportion of chloride in the emulsion, as when it is present a less exposure, less restrainer, and likewise a shorter time in development is required to secure a red tone, and the image appears better by reflected light. I trust the following working directions will enable our readers to succeed—even those who have never made an emulsion.

First make up the following solutions:

No. 1.—	Silver nitrate....	100 grains.
	Citric acid......	100 "
	Water..........	3 ounces.
No. 2,—	Chloride sodium.	20 grains.
	Bromide potass..	40 "
	Citric acid......	100 "
	Nelson's No. 1 Gelatine..	40 "
	Water..........	3 ounces.

Raise the two solutions to a temperature of 150°, and pour No. 1 into No. 2 in a steady stream, with constant stirring; of course this must be done in the dark-room, but plenty of yellow light may be used, as the emulsion is a very slow one. Now take 200 grains of Heinrich's gelatine which has already been allowed to swell in cold water, and add this to the hot emulsion, when it will readily dissolve. The jar containing the emulsion must now be put on one side to set, which it will do in a few hours if stood in cold water, especially during this cold weather, but it is preferable to leave till the next morning, when it is ready to be squeezed through a piece of coarse canvas into cold water and washed for three or four hours in running water, after which it should be drained, and half an ounce of alcohol added, melted at a temperature of 140°, and than filtered through two thicknesses of a pocket handkerchief. It should measure about 10 ozs., and is ready for coating the paper, which I found at first a very troublesome affair, but can now coat as easily as on glass, which I manage thus: The paper should be cut up into pieces, say half-plate size, and put into a dish of warm water to soak; in another dish of warm water several half plates should be placed for the purpose of warming them, or they may be warmed before a fire and placed in a pile, which will retain their heat. One of the warm plates is then taken on a pneumatic holder and a piece of the wet paper slipped on to it, avoiding any air-bubbles; allow the surplus water to drain off for a few seconds, and pour on a pool of emulsion, which by this time should be about 110°; it will be found to flow as easily as collodion. About two drachms of the emulsion is sufficient for a half-plate. It must be allowed to set by being placed on a glass slab previously leveled, and when set, can either be stripped from the glass and hung up by one corner to dry, or allowed to dry on the glass support. I prefer the latter method, as the paper is less liable to cockle.

The necessary exposure behind a clear negative, which can only be found after a few trials, will be found to be about twelve or fifteen minutes, nine inches from a fish-tail burner; a slight trace of an image can be seen after exposure. The developer I have used in my experiments is Mr. B. J. Edwards' ferrous oxalate, with the addition of a bromide, either ammonium or potassium.

No. 1.

Oxalate potass............	2 ounces.
Amm. chloride..........	40 grains.
Water (distilled)........	20 ounces.

No. 2.

Ferrous sulphate.........	4 drachms.
Citric acid...............	2 "
Water (distilled).........	20 ounces.

No. 3.

Amm. or potass. bromide..	1 ounce.
Water (to make).........	3 ounces.

Equal parts of Nos. 1 and 2 are taken, and 1 drachm of No. 3 added to each ounce of developer. The image appears in about one and a half minutes, and if the exposure has been correct, development will be complete in five minutes, and of a red color. After toning slightly and fixing, the print will be of a beautiful pink, and very pleasing.

I have since tried cutting down the exposure to three minutes, using only 20 minims of No. 3 solution; the image is still red after developing, and is perhaps of a more satisfactory color when finished, besides the advantage in giving a shorter exposure; in this case the development will be complete in three minutes. Care must be taken not to over develop, or the finished print will have a dead appearance. After developing, the prints should be rapidly rinsed in three or four changes of water, and placed in a strong solution of ordinary white alum for ten minutes, and again washed in several changes of water, then toned in the following bath:

Acetate of soda..........	30 grains.
Chloride of lime..........	3 "
Chloride gold...........	1 grain.
Water (boiling)...........	6 ounces.

Use this when cold, and tone till the prints assume a decided purple tint, as they lose a little in the fixing bath, but dry again much colder. Fix in hypo 2 ounces to 1 pint of water for ten minutes. They will not lose in color if left even for a half-hour if the bath is not acid.

After washing, the prints can have a gloss imparted to them by taking a piece of clean glass, and well polishing with French chalk; the wet print is laid on this face downwards, and the excess of water squeezed out by rubbing over the back with the fingers, and mopping up with blotting-paper. It must now be allowed to dry spontaneously; on no account must heat be applied. In a warm room they will dry in a few hours, when they will easily strip off with a glaze equaling an enameled print.

I have already run this article to considerable length, but trust the formula will prove successful in the hands of those who will take the trouble to try it. In the few experiments I have made, I certainly prefer the results to albumenized paper, there being greater clearness and brilliancy in the shadows. Very fine results can be had on opal, which is easier to manipulate than paper. I do not give the above as a perfected formula; no doubt others may improve upon it, but as it stands it gives very pleasing results.

[*From " The Photographic News."*]

TESTING GELATINE.

BY CAPTAIN ABNEY, R.E., F.R.S.[*]

GELATINE plate-makers are fully aware that the quality of gelatine varies very considerably as regards the tendency to frill. It has often been thought that this tendency is simply dependent on the amount of water which the gelatine will take up ; and no doubt, to a certain extent, this view is correct, but it is by no means universally true. When a gelatine lies on a plate the drying proceeds of course according to the temperature and dryness of the air with which it is surrounded ; but it appears that different gelatines, under the same conditions, will dry in different times, and that the mere fact of drying puts a stress on the gelatine more in the plane of the plate than vertically to it. Under these circumstances, gelatines dried under the same condition as films on a glass surface, will expand more or less in the direction of the surface of the plate ; and we may expect that the more a gelatine expands laterally, the more tendency there will be to wrinkle, blister and frill. To test this, a series of plates were coated with different gelatines, five grains of each being spread evenly on ¼ plate, and then dried in a drying cupboard. The films were then stripped off the plates, cut off and measured accurately.

One set of the measured gelatines was placed in water of 60° F., and allowed to swell for twelve hours. Another set was placed in water to which 6 drops of ammonia were added for every 2 ounces, which is about the strength of alkali in a developer. Another set was placed in a solution of potassium mono-carbonate, and another in sodium mono-carbonate, and in these and the ammoniacal solution the gelatines were allowed to soak for one hour. The different kinds of gelatine were then placed without tension on glass plates, and again carefully measured. The following table shows the results obtained, the figures giving the linear expansion, taking the dried gelatine as unity :

	Water.	Ammonia.	Sodium or Potassium Mono-carbonate.
Nelson's No. 1	1.2	1.39	1.29
Autotype	1.094	1.28	1.21
Heinrich's	1.08	1.22	1.15
Simeon's	1.05	1.14	1.09
Batty's	1.32	1.50	1.42
X Opaque, Nelson's	1.19	1.40	1.30
Cross & Blackwell's	1.09	1.24	1.17
Amber	1.43	1.60	1 51

The result of this table is somewhat curious. It shows that ammonia promotes frilling, whilst the mono-carbonates, though they cause a greater expansion than water alone, yet give a decidedly less inclination to frill than does the ammonia. This I have found in practice to be the case, so on this account, if on no other, the mono-carbonates are superior to ammonia in the developer. It is not hard either, from this table, to pick out which are the soft and which the hard gelatines, the expansion being greater the softer the quality.

The amount of water absorbed by some of these gelatines per 50 grains has already been published by me, and they are as follows :—

	Ash per cent.	Water absorbed per 50 grains.
Nelson's No. 1 Photographic	2 nearly	5½ dr.
Heinrich's	2 "	4 "
Simeon's	2 "	5 "
Amber	1 "	4 "

Gelatine is altered if any quantity of ammonia is added to it, more particularly when warm. As far as I can see, the tendency to frill is about the same as it is when it has not been so treated. There is no doubt that it is more sponge-like in its qualities—that is, much more permeable by the developer.

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[*] Read before the Photographic Society of Great Britain.

Though deviating a little from the title of the paper, I wish to draw your attention to an easy method of coating plates with gelatine emulsion, making it flow like collodion. I have seen it stated that on plates with a substratum of silicate it flows well. My own experience is the reverse. I have found that, as a rule, with silicate and albumen the emulsion drags excessively, as it does with silicate alone. There have been cases in which the plates have flowed well, but that was quite an exception. (I would put in a parenthesis that there is no necessity to wash the substratum after it has been applied. I did so at first, but have found it needless, the slight excess of potash or soda having no appreciable effect on development. I have once or twice thought that it promoted a little blue fog at the back of the film, but I don't think it is the case.) Gelatine substratum I have found always drag most tremendously. A little dodge gets over all this difficulty. A piece of swandown calico is wrapped round a squeegee and slightly damped. Just before coating the plate, the muffled squeegee is drawn a couple of times over the surface to be coated, and the emulsion immediately flowed over. It will be found to run evenly and rapidly. With a plate-coating machine, of course this dodge is unnecessary.

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[*From* "*Revue Photographique.*"]

RECENT RESEARCHES IN THE CHEMISTRY OF THE HALOGENS.

BY VINCENT ELSDEN.

ALL those who study photographic chemistry have need to collect all that is brought to our notice on the reactions of the halogens. And for some time much has been written upon the affinities of halogens and the inverse displacements, so difficult to understand, which the haloids of silver are able to produce under certain circumstances.

We have also known for some time, in a general manner, that the affinities of the halogens are in the following order: chlorine, bromine, iodine, fluorine. But under certain circumstances they appear in the reverse order. Berthelot, who has worked much upon this question, has recently published some elaborate researches, which apparently prove conclusively that the displacements are in perfect accord with the law of "calorific maximum;" that is to say, that the combination which produces most heat is formed by preference.

In this connection it is good to know, from a photographic point of view, that the thermo-chemical laws are able to explain the capricious behavior of certain elements in so many of the reactions which have place in photographic operations, and are generally too complicated and too small to admit of calorimetric investigation.

Lately a little light has been thrown upon the peculiar properties of iodide of silver when heated. Rodwell has found that the iodide undergoes a sharp and considerable change at 142° to 145° C., which afterwards proceeds regularly. Mallard and Le Chatelier have recently demonstrated that silver iodide is dimorphous. These investigators have found that, on arriving at a temperature of 138° C., the color of iodide of silver changes suddenly from yellow to yellowish white. And it is proved that when the iodide is examined by polarized light, it passes from the hexagonal crystalline form to that of the cubical, when the temperature reaches 146° C., absorbing 6.8 calorics during the change. This change of crystalline form and the absorption of heat explains sufficiently the sudden contraction observed by Rodwell.

Much attention has been given to methods for separating the halogens in analysis. As this is a question that particularly concerns the quantitative analysis of photographic chemicals, it will be useful to give a summary of those methods that have been recently suggested.

The following method has been proposed for detecting traces of iodine in mixtures containing very large quantities of chlorine and bromine. It is really a modification of Duflo's method for determining iodine in iodides by boiling with ferric chloride, and condensing the vapors in a concentrated solution of potassic iodide. This method is not good in cases where bromides are present, because the bromine is lost with the iodine. But if ferrie sulphate is used instead of the chloride, the iodine alone is volatilized. This reaction serves to detect chlorine in commercial iodide of potassium, because the chlorine remains entirely free of iodine and does not mix during the operation.

Bloxam has proposed a simple method for separating the cyanide of silver from chloride of silver, by treating the mixture with hot dilute nitric acid in which the cyanide is soluble.

A simple method for estimating chlorine, bromine and iodine mixed, is based on the observations of Field, that chloride of silver is converted into bromide by the action of bromide of potassium, and the bromide into iodide with iodide of potassium.

An aqueous solution of cyanide of potassium completely dissolves the mixed haloids of silver. Some potassium bromide is now added, equal in weight to the original silver salts, and the excess of cyanide is decomposed by sulphuric acid. The precipitate now contains only the bromide and iodide of silver. Now weigh and dissolve as before in potassium cyanide. Potassium iodide, weighing one and a quarter times the original, is added and the excess of cyanide decomposed as before. The precipitate now contains nothing but silver iodide, which is weighed, and the proportions of chlorine, bromine and iodine are calculated from the difference in the three weights.

[The above method with cyanide should be worked in a place with a good draught, as the result of the action of sulphuric acid upon potassium cyanide is hydrocyanic acid gas, which is *highly poisonous*, more especially if it is inhaled. *Editors of* BULLETIN.]

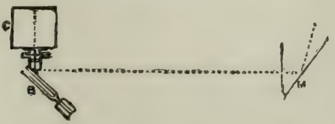
[*From* "*Science.*"]

MEASUREMENT OF THE SPEED OF PHOTOGRAPHIC DROP-SHUTTERS.

BY W. H. PICKERING.

THE usual method adopted for this purpose depends on photographing a white clock-hand revolving rapidly in front of a black face. The chief difficulty in this case is to maintain a uniform rotation at high speed. To avoid this difficulty, and to determine the uniformity of exposure of any particular shutter under apparently like circumstances, the following method has been suggested. In carrying out the experiment in practice, I have had the assistance of Mr. J. O. Ellinger.

A tuning-fork, B, with a mirror attached to the side of one of the prongs, is placed in front of the camera lens. This mirror is so arranged as to reflect into the camera, C, a horizontal beam of sunlight, which, before reaching the fork, has passed through a half-inch hole in a screen, S, placed about ten feet distant. This produces on the ground-glass a minute brilliant point of light. If the fork be set vibrating, the point will become a short, fine, horizontal line; if the fork be rotated about its longitudinal axis, the line will become a sinusoidal curve described on the circumference of a circle of long radius. A photographic plate is now inserted, and the drop-shutter attached. On releasing the latter, it will be found that a portion of the sinusoid has been photographed; and the precise exposure may be determined by counting the number of vibrations represented on the plate.



The mirror employed should be somewhat larger than the lens to be measured, so as to cover its edges during the whole exposure. The mirror may be glued directly to the prong of the fork with strong carpenter's glue, after first scraping off a little of the silvering at the edges of the glass. The rate of the fork is then determined, by comparison with a standard fork, by the method of beats.

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[*From* "*The British Journal of Photography.*"]

THE SIEMENS' UNIT LAMP FOR PHOTOGRAPHERS.

CAPTAIN W. DE W. ABNEY.

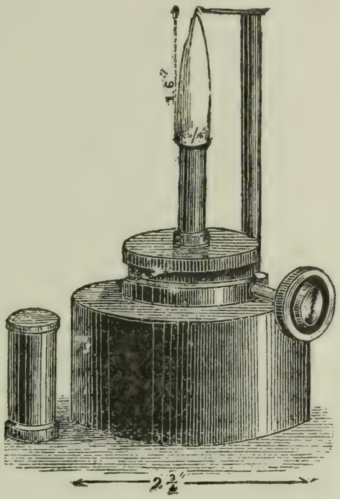
[A communication to the Photographic Society of Great Britain.]

THERE are so many difficulties regarding a standard light that it has struck me I might say a few words with advantage regarding the auxiliary standard which was proposed by Dr. Werner Siemens at the late Electrical Congress held in Paris in April last. Recently Dr. Siemens kindly presented me with one of them, and I have experimented with it, both for photometric and photographic purposes. The lamp is illustrated in the diagram. The two principal portions of it are a tube five-sixteenths of an inch in internal diameter, through which the wick passes, and a gauge to measure the height of the flame, which has to be 2.6 inches high. Whether the wick be a closely-compressed one or loose does not seem to matter; cotton wool will answer every purpose. The material burnt is acetate of amyl which, though dear when obtained pure, is very cheap at all events in Germany, being sold at a few shillings a pound. It has a characteristic smell of pear drops, and is much used in confectionery, I am told, to give this particular flavor. The flame you see before you is a steady one when no draughts are about. In case of draught it may be enclosed in a glass tube with an air space beneath, but as a rule this is unnecessary.

The wick is trimmed even with the tube, and when out of use there is an extinguisher or cap which screws over it, making it airtight and thus precluding the evaporation of amyl acetate. After the lamp has been lighted a couple of minutes the flame assumes its normal height, and is regulated so that the point is just the height of the gauge. In this state it emits the light of a candle. It should be remarked that the acetate of amyl contains a large quantity of oxygen in proportion to the carbon, and hence requires but a small supply.

I have been trying this unit lamp for use with the sensitometer, and find that at a distance of eighteen and a half inches from the plate, and with half a minute's exposure, it gives the same illumination as the phosphorescent tablet which is in my possession. I have repeatedly tried the same batch of plates at different times with the lamp, purposely disturbing the wick between times, and readjusting it to the height of the gauge. This gave always the same results on the plate exposed behind the sensitometer, showing that for this purpose it is a thoroughly reliable source of illumination. I cannot trace any effect of a difference in height of the barometer or thermometer. It is to be presumed that some slight variation must exist, but so far inappreciable, which is more than can be said when using the standard candle.

It may be asked, why substitute such a standard for the phosphorescent plate? The reason why I would do so, is that the light emitted by the phosphorescence is confined to one small portion of the spectrum, as a previous paper of mine has shown, and that as you mix iodide with bromide the comparison of two plates—one iodo-bromide and the other bromide alone—when made by phosphorescence is in favor of the latter, since the place of a maximum sensitiveness of the former is below the point in the spectrum at which the phosphorescent tablet emits light. This being the case, I should like to see some such standard as this used, as it is handy, and only requires the application of a match to start it. It is also convenient for use in taking transparencies by contact. The exposure of a plate behind an ordinary dense negative, which registers 24 on the sensitometer at two feet distance, takes one minute to give a good image. Such a lamp, too, is handy for traveling. It can be enclosed in a shade of orange paper, or by the card-board lantern which I long ago recommended, and which is the simplest form of any lantern with which I am acquainted, and plates can be changed or developed by its light. Now, as to the manufacture of such a lamp there is no difficulty; the form I have here is more expensive than is necessary. It will be seen that an ordinary spirit-lamp could be adapted to it by replacing the tube usually supplied by a slightly longer one, and making the glass cover a little longer than is now done; even this is not necessary. The point to be attended to is to keep the heat at a fair distance from the spirit. I need scarcely enter into the subject of photometry with this lamp; suffice it to say that if the burner be of the dimensions I have given, and the flame kept to the standard height, every one has it in his power to reproduce the light of an unfluctuating standard candle. Here, then, is a point gained at once. Mr. Spurge brought forward the idea of using a gas flame of a certain height, and issuing from a hole of fixed diameter, to illuminate the screen he proposed to use with his sensitometer. As gas is not always available it is probable that a modification, founded on the principles of the Siemens unit lamp, might be utilized.



* * *

YOUR BULLETIN of February 14 is received. I am very much pleased with it. Think it a good investment of two dollars. Please send the back numbers. I wish to have the volume complete. Yours respectfully,

FRANK P. ROBINSON.

[*From "Photographisches Wochenblatt."*]

ABOUT CARBON PRINTING.

BY F. STOLZE.

FOR a whole number of processes at present in use reversed diapositives are required and it may therefore be in order to recall again a process which for such purpose is not only the safest, but also the simplest and most convenient, if a little practical knowledge has been acquired. I refer to the carbon process. A good many, of course, may say that the process is old, known to everybody, and that a description of the same can be found in every photographic instruction book. In a certain sense that is true; but whether the descriptions and formulæ therein will be sufficiently understood to secure an easy manipulation without mistakes, is another question, which oftentimes has to be answered in the negative. I will therefore make the attempt to describe the manner in which I operate, giving at the same time the assurance that I have never been disappointed by its use.

I. Treatment of the Carbon Paper.—The carbon paper is prepared in long rolls, being rolled with the pigment coating towards the inner side. Aside from the protection and security, this way of rolling seems to impart to the pigment coating, I cannot but regret that it is not sold by the dealers with the pigment coating towards the outside. All reasons and rules for the keeping of albumen paper in this manner find the same application, even in a higher degree, for the carbon paper. The handling of the same in the sensitizing bath is very difficult, and if kept in a dry, warm place, it will become so brittle, and the gelatine coating will contract so much that it can hardly be unrolled and cut into pieces without tearing or breaking. For this reason it is recommended to keep the paper not too dry; but here it is forgotten, that pigment paper will become moldy very quickly, and such fungus formations, hardly perceptible, will show during development as dark spots, spoiling the picture entirely. I have, therefore, for a considerable time practiced the following with the best results: After obtaining a fresh roll of pigment paper, I keep the same for about twenty-four hours in a moderately moist room, unroll it completely, then roll up again, pigment coating towards the outside; wrap up in good white drawing paper, and then finally in packing paper. Now the paper can be kept without any disadvantage in the driest place, and it will never crack while unrolling. It can be cut nicely with rule and knife, and sensitizes very easily. In short, all difficulttes seem to have been surmounted. My remark about cutting paper with a knife should not be disregarded; it can be easily torn by folding it, but then small pieces of the coating might stick to the outside and dissolve afterwards in the sensitizing bath, or stick to some part of the picture, thus spoiling it.

II. The Sensitizing Bath.—It consists of a four per cent. solution of bichromate of potassium, to which has been added so much concentrated solution of ammonia that the orange-colored shade has changed into a yellow one, and that the liquid has a weak ammoniacal smell. This ammonia addition is by itself without any particular effect upon the sensitiveness of the paper, the gas escaping again; but it has the advantage that the same bath, particularly if kept in a dark-brown bottle, can be used again and again. But if left out, those parts of the coating passing into the bath during sensitizing will be the cause of impregnating the same with substances that will become insoluble during drying, making the bath useless. The bath, of course, has to be filtered each time before use. The carbon paper has to be wiped on both sides with a clean cloth before preparing the same, to remove dust, etc. The paper is then entirely immersed in the chrome bath, which has to cover the bottom of the dish sufficiently. If prepared in the above described manner, no difficulties will be encountered; it is left in the bath until all rigidity has gone, and until the gelatine has swollen so much that the coating on the edges seems to become convex shaped. It is then taken out and treated as in No. III.

III. The Drying of the Pigment Paper is connected with a good many difficulties. If too much time is used for drying, the coating will become partly insoluble, and care should be taken that it will dry in not more than twelve hours. If, on the other hand, heat is employed for drying, there is danger that the coating, containing, besides the gelatine, sugar and glycerine, will become liquid and run off the paper. If the paper is hung up to dry, like albumen paper, it will frill, and even in the strongest printing frame it can only be put with the greatest difficulty, and it is almost impossible to bring it in complete contact with the negative. Finally, all dust floating in the air during drying will adhere to the coating and be the cause of just as many defects. To prevent melting of the coating under higher temperature, alcohol has been added to the bath, and to prevent the frilling during drying, by different arrangements in hanging up the paper. But there is a much simpler way to not only prevent all these evils, but also that of slow drying at low temperature and of dust. A few pieces of plate glass, well washed and of a little larger size than the pigment sheets, are well dusted with powdered chalk and rubbed well with a clean cloth or some cotton free from fatty substances. Upon these plates are placed the sheets taken from the bath, coated side down, covering them with a piece of blotting paper, or rubber cloth, and running the squeegee over the surface. The latter manipulation will prevent air bubbles. The pigment paper treated in this manner will contain only a minimum of liquid; it dries very quick, even in cool places, but can stand also a higher temperature without running off, particularly as the glass plates can be laid down horizontally, without any fear of dust. In a place with a temperature of 19° to 20° C. the drying of such paper will take place in from two to three hours, after which it will separate from the glass or can be taken off by taking the fine blade of a knife and inserting it at the outer edge between glass and paper. Pigment paper treated this way has a peculiar appearance, if compared with that prepared in the usual way, having a gloss like the finest albumen paper and an enameled surface. With such paper there is no difficulty in placing it in perfect contact with the negative. If any wrinkles should have formed by insufficient squeezing, it is only necessary to roll up the paper for about twelve hours to obtain a completely even surface. Paper prepared in this way will keep for at least a week. Besides this drying method, another advantage is to be mentioned. The influence of bad gases causes the pigment films oftentimes to become insoluble during drying, and coal gas particularly is in this respect most dangerous. The drying method described here has the advantage, that the drying requires only from $\frac{1}{4}$ to $\frac{1}{6}$ of the ordinary time, and the pigment coating is protected from all atmospheric influence. I never had any cause to complain about a spoiling of the film.

IV. *The Copying.*—The most brilliant negatives will—as in the albumen paper process—give the best results, although a good deal can be done by subsequent intensifying. A border of black or red paper is put around the negative to be copied, for the purpose, to obtain around the pigment paper a completely soluble film, and in this way to facilitate the separating of the paper during development. This shows that the pigment paper has to be a little larger on all sides than the mask. As the pigment paper cannot be examined like the regular albumen paper during printing, it is best to use a photometer similar to that of Vogel or Warnerke. In this is placed a piece of regular letter-paper, which has been sensitized in the chrome bath at the same time as the pigment paper, and which shows a correspondingly yellow color. As soon as one has become familiar with the use of such an instrument, it is pretty easy, to judge from the density of a negative, to which grade it has to be copied. But in case of a doubtful negative, a proof piece can easily be copied and developed. If the copying should have been a little too long, it will do no harm changing the result, as the mistake can be easily remedied during developing. It is not necessary to do the latter directly after copying, but it must be remembered that the action of copying will continue even in the dark.

V. *The Transfer.*—As for the foregoing purpose the transfer upon glass comes only into consideration, we will confine our remarks to this subject. Here is the point where a picture otherwise free from defect can be spoiled in the most easy way, if even ordinary caution be disregarded. There are generally two methods of transferring: one with collodion and the other,—discovered by Sawyer—with gelatine chrome alum. The latter method enjoys most confidence, and is more reliable. At the same time, besides the covering of the glass plate, a covering of the negative itself with collodion is advised in both methods, to prevent the appearance of a peculiar granular or net-shaped structure. I for my part cannot approve of the covering with gelatine chrome alum, which, no matter how thin, will cause a slight coloration of the whole film during intensifying, which might better be avoided; and then the principal effect ascribed to the same of preventing that structure, can be attained much surer by means to be described now, the employment of which will make the flowing of the coating with collodion, under all circnmstances, unnecessary. The actual reason for all those coverings is to obtain a solid substratum adhering to the glass to which the pigment coating can lay on to close, without the formation of air bubbles. Now, it is not to be denied that collodion will meet the first requirement only partly if it is poured directly upon glass, as under a certain temperature even the best collodion will show a tendency to separate and peel off. For that reason I have employed for some time two different methods, which both thoroughly avoid this defect:

1. The well-washed glass plate is coated in the well-known way, with albumen—1 : 10 to 1 : 20—and flowed after drying with collodion, iodized with cadmium and other metallic salts, coagulating the albumen. If, after setting of the collodion, the plate is watered, the salts will be washed out, and, at the same time, the salt solutions will coagulate so much of the albumen coating as had not been done by the collodion.

2. The glass plate, well cleaned, is flowed with a rubber solution. The latter is easily prepared by diluting one part of "rubber solution in benzine," such as is generally found in the market, with about 500 parts of diluted or not very strong benzine, and subsequent filtering through cotton. The so-treated plates are left to dry for about an hour, and are then coated with plain collodion, of one to one and a half per cent. This second method, particularly, I have lately worked with success.

Now we come to the actual transfer. There is here one general rule, which gives security against every structure of the coating, and makes a flowing of the same with collodion absolutely unnecessary: *Use for transfers only water which is free from air and carbonic acid.* To obtain this, it is necessary to cook or boil the ordinary water, and let it cool off again; distilled water will do, but it is not so good. To be certain that carbonic acid bubbles may not originate by dissolved carbonic acid salts in bi-chromate, the water can be mildly acidified with muriatic acid. I draw particular attention to this, that all well water and water flowing through pipes contains considerable quantities of air or carbonic acid. Water that has been standing for some time will furnish a pretty useful product, but the boiled water is absolutely certain. The process is the following: Take the plate described as above, and flow with collodion, which, after becoming rigid, is placed into a dish with water free from air and moved until the fatty stripes have disappeared. Then the copied pigment paper is placed into a second similar dish and left to soak until it has completely stretched. It is now, film side down, placed into the dish with the glass plate, in proper direction to the latter, and then taken out with the same. The plate is now laid upon a solid foundation and treated with the squeegee, as described under No. II. Leaving the moist blotting paper upon it, a glass plate is placed on top, and the whole is left under a light weight for about 10 to 15 minutes.

(*To be continued.*)

◆

ONE of our New York Amateurs recently showed us some uncommonly good prints that he obtained by long fuming. They have a very rich tone and are more than ordinarily fine in the details. His method is to take a band-box, place a saucer of concentrated ammonia in the bottom, and stand his paper around the sides. The lid of the box is fitted on and the whole left for *one and a half to two hours*. The results shown are magnificent.

◆

MORE WITNESSES.

I LIKE the tone and general appearance of the BULLETIN. You select the cream of the profession for the good of the photographic fraternity. Yours truly,

EDGAR MORAN, *Iowa.*

WE are greatly pleased with the new BULLETIN, especially with the column devoted to questions and answers. We think it will be a source of extreme satisfaction for both amateurs and professionals.

Yours truly,
J. H. McGOWAN.

What Our Friends Would Like to Know.

Q.—W. M. W. writes: "You say the proper time of exposure can be ascertained by making 3 or 4 exposures on one plate. How is this accomplished?"

A.—You should withdraw the slide of the plate holder and expose small sections of the plate at a time, thus: 1 second, expose ¼ of plate; 2 seconds, ½ of plate; 3 seconds, ¾ of plate; 4 seconds, the whole of plate. You will now have the last quarter of the plate, with one second's exposure, and the next quarter 2 seconds, the next 3, and the first part that was exposed will have had 4 seconds exposure. Put cap on lens at last exposure; don't try to put in the slide of plate holder; you will not be able to do it quick enough.

Q.—C. H. writes: "I would like to know what is the cause of my gelatine plates frilling so badly this cold weather? I put them into strong alum solution, direct from the developer, but nearly every one frills more or less. I had no trouble in warm weather. Also, can you tell me how to prevent the albumen softening on the prints in washing?"

A.—Your gelatine plates are probably those made for stripping, in which case the whole film will slide off if the water should become warm. Good plates (non-stripping) do not frill this weather if your solutions are cold. In the case of the albumen paper, your trouble seems to be that your solutions are probably too cold. Tepid solutions for washing prints are most desirable.

Q.—W. J. G. says: "I would like to know how diamond varnish is made? It is mentioned as gum copal dissolved in benzole. I bought bisulphide of carbon, as I could not get benzole, but it would not dissolve gum copal. I tried mixing it with gasoline, also alcohol, but could not dissolve it."

A.—We do not know how diamond varnish is made. If you want to dissolve gum copal, you must get coal tar benzole; not that which is usually sold as benzine. This latter is made from petroleum, and is an entirely different body from that obtained from coal tar.

Q.—C. B. B. asks: "Will you kindly inform me where I can obtain directions and formula for *photographing on linen and silk?*"

A.—Size the fabric with a solution of gelatine, 10 grains to the ounce, and then coat it with the sensitive materials in the usual way.

Q.—J. H. McG. sends us the following questions:

1. What is the best way to avoid drying rings on gelatine bromide plates? The large sizes are more given to these faults than the small ones. 2. How long should an emulsion be allowed to ripen, and at what time, before or after, is it washed and filtered? 3. Will you please publish a formula for Newton's Emulsion, the one where washing is not performed, but where the nitrate is converted into chloride by adding cobalt chloride?"

A.—The drying rings can be avoided by removing the bulk of the water on the gelatine surface, by means of blotting paper with a pretty compact surface. Or you can flow the plates with alcohol, which makes them dry more rapidly. In regard to the ripening of emulsions, you will do best to consult Dr. Eder's book on Emulsions, issued by our publishers. The whole question is there discussed in detail. Mr. Newton's formula and directions were published in the BULLETIN for June 1875. Our space is too much in demand at present for us to promise to publish it, at least at an early date.

Q.—S. K. writes: "Can you tell me how to avoid the small pin-holes and specks that will come in my negatives and spoil the skies? I filter every solution and am assured that the cause is elsewhere?"

A.—Your trouble is probably DUST. See that the *slides of your shield are perfectly smooth.* Any roughness will act as a file and grind off minute particles of wood from the holder frame. These settle in the plate and cause pin-holes. The best article for a slide is polished vulcanized rubber. The next best is a hard rolled press board, well coated with a *smooth varnish.* If you use above, see that the interior of the shield is well dusted, and after placing the plates in the carrier, dust them with a broad camel's hair brush before putting them in the shield. Failure to secure freedom from dust has spoiled many a negative that otherwise would have been a treasure.

Q.—S. V. C. sends us some pictures that have a granular appearance, and wants to know the cause.

A.— We have seen quite a number of such pictures during the late cold weather, and the remedy is a very simple one. Keep your solutions tepid, just so warm that you scarcely notice the warmth with the hand.

Patents.

AMERICAN.

No. 311,057. Method of preparing pictures and photographs for photo-engraving. R. Brown, R. W. Barnes and J. Bell, Liverpool, England. Issued Jan. 20, 1885. Patented in England, March, 1883.

No. 311,463. Photograph burnishing machine. Myron T. Baldwin, Chicago. Filed July 31, 1884. Issued Feb. 3, 1885.

No. 312,581. Shutter for photographic cameras. C. Prosch, New York. Filed Jan. 21, 1884. Issued Feb. 17, 1885.

No. 312,937. Portable dark room for photographers. William W. Walker, Williamsport, Pa. Filed Aug. 12, 1884. Issued Feb. 24, 1885.

ENGLISH.

Applications.

No. 424. Alexander Lamont Henderson, 9 and 10 Southampton Buildings, Holborn. For "Improved method of, and apparatus for, coating glass or other plates, paper, cardboard or other material with liquefied gelatine or other fluids, particularly applicable for coating plates for use in photography." Complete specification. Dated 12th January, 1885.

No. 509. William Henry Marshall, 12 Westborough, Scarborough, Yorkshire. For "Improvements in photographic shutters or caps." Dated 14th January, 1885.

No. 976. Alfred Pumphrey, 77 Colmore row, Birmingham. For "Improvements in tripods for photographic purposes, applicable, also, to other similar uses." Dated 23d January, 1885.

No. 1,027. Robert Gallaud-Mason, 4 St. Anns' square, Manchester. For "Improvements in micro-photoscopes." Dated 24th January, 1885.

No. 1,072. James Thomson, 4 Clayton square, Liverpool. For "Improvements in photographic cameras." Dated 26th January, 1885.

No. 1,120. Frederick Woodward Branson, 33 Chancery lane, London. For "Improvements in the construction of photographic cameras." Dated 26th January, 1885.

No. 1,137. R. R. Beard. "Photographic camera clip." Dated 27th January, 1885.

No. 1,175. Arthur Henry Loring and Nele Loring, 47 Lincoln's Inn Fields, London. For "Improvements in the production of photographic pictures." Dated 27th January, 1885.

No. 1,343. James Thomas Payne, 22 Southampton Buildings, Chancery lane, W. C. For "An improved combination mount for photographs and other like articles." Dated 30th January, 1885.

No. 1,406. John Urie, 33 Chancery lane, London. For "Improvements in photographic printing and in apparatus therefor." Dated 31st January, 1885.

PATENTS SEALED.

No. 912. Robert Gallaud Mason, of Hambleton House, Promenade, Douglas, Isle of Man, Schoolmaster, for "An instrument to be called the 'micro-photoscope.'"—Dated 8th January, 1884.

No. 1,251. George Rydill, of 52 Chancery Lane, in the County of Middlesex, for "Improvements in treating photographic transparencies or transfers so as to represent stained glass."—Dated 11th January, 1884.

No. 13,774. John Mitchell Dowling Worsnop, 4 South Street, Finsbury, London, for "An improved method of transferring the film of photographs, or a film of color painted upon photographs, to canvas or other surfaces."—Dated 17th October, 1884.

No. 1,622. Alexander Crawford Lamb, of Reform Street, Dundee, in the County of Forfar, Hotel Proprietor, for "Improvements in photographic cameras."—Dated 17th January, 1884.

No. 8. Frederic William Hart, of 8 and 9 Kingsland Green, London, in the County of Middlesex, Manufacturer of Scientific Apparatus, for "Improvements in portable photographic cameras."—Dated 1st January, 1884.

No. 9,026. Henry Gardner, 166 Fleet Street, London, Patent Agent, for "Improvements for producing from photographic negatives, blocks or plates suitable for typographic surface printing." A communication to him from abroad by George Sutherland, Adelaide, South Australia, journalist. Dated 16th June, 1884.

SPECIFICATIONS PUBLISHED.

3510. Henry Bratt Sharp, of No. 5, South John Street, Liverpool, in the County of Lancaster, Optician, for "Improvements in portable legs, supports, or standards for the stands for cameras, stereoscopes, telescopes, theodolites, music, easels, surveyors' staffs, and other like purposes."—Dated 18th February, 1884.

319. Samuel Dunseith McKellen, of 18 Brown Street, Manchester, Watch Manufacturer and Jeweller, for "Improvements in photographic cameras."—Dated 2d January, 1884.

1814. Frederick William Hart, of 8 and 9 Kingsland Green, London, in the County of Middlesex. Manufacturer of Scientific Instruments, for "Improvements in portable folding tripod stands."—Dated 21st Jan., 1884.

14,335. William Griffith Honey, of 3 High Street, Devizes, in the County of Wilts, Artist and Photographer; for an "Improved holder and dark slides to be used therewith for sensitive plates."—Dated 30th Oct., 1884.

15,202. William Griffith Honey, of No. 3, High Street, Devizes, in the County of Wilts, Artist and Photographer, for "A new or improved holder for manipulating a photographic plate."—Dated 19th November, 1884.

Bibliography.

CAN any of our subscribers supply us with a copy of the BULLETIN FOR JUNE 1875. If money is an object we will pay twenty-five cents for the number.

The first edition of the BULLETIN *of Jan. 24th* 1885, is exhausted, and if our new subscribers will have a little patience, the reprints will reach them shortly. Our new subscriptions are more numerous than we expected so soon after our new issue. We are very much encouraged, and feel that our labors to please have been appreciated.

SUBSCRIBERS will please keep us informed of any mistakes in addresses that may occur. Also see that your new subscription is recorded by the *change of date of expiration* on the wrapper.

OUR ILLUSTRATION

Is from a negative made at Mr. William Kurtz' Gallery, by Mr. Charles Ehrmann, with the aid of the electric light. The printing was done by Mr. Hugh O'Neill, on the Pensé Paper Extra Brilliant Dresden brand, with the well-known water-mark, N. P. A.

Don't stop the BULLETIN. Can't keep house without it.

H. B. C.

Found in the Editor's Box.

LOGIC.—The Buffalo Convention will be a success.

Why?

Because it succeeds the Cincinnati Convention, and "nothing succeeds like success."

Then it follows, that every *succeeding* convention will be a success.

Exactly right. Go up head.

"The world has been saved the necessity of saying hard things against the Cincinnati Convention."—*Funny Man of the Times.*

"The world is duly grateful."—*Many Times.*

ANTI-CLIMAX.

RIDING one day through a lovely country region with an enthusiastic amateur photographer from across the ocean, he was so carried away with the beauty of the scenery, that he wished to express his delight in the strongest possible terms.

As the word "grand" was not sufficient to give vent to his admiration, he piled on the adjectives in the following extraordinary fashion.

Grande, magnifique, pretty good! PRETTY GOOD!! PRETTY GOOD!!!

He evidently imagined that a thing that was both *pretty* and GOOD, was the climax of everything excellent.

Views Caught with the Drop Shutter.

A. L. Moffatt's Studio Burned at New Britain, Conn., Feb. 20.

WE regret to note the burning of Mr. Moffatt's fine gallery, which was a total loss.

The gallery has been running three years, and had just got to the top of the ladder, when it was swept away.

To the citizens of New Britain it was a great disaster, as all the negatives were a loss which money cannot repay. Mr. Moffatt valued his goods at $7,000, on which he had $2,500 insurance.

He has not decided where he will re-open. Wherever he does, he has the talent to make the best of work.

CAPTAIN ABNEY has been appointed Assistant Director of the Science and Art Department at South Kensington, which has become vacant by the death of Mr. J. F. Isalin. Captain Abney has for some years been an Inspector of Local Science Schools connected with the South Kensington Department.

PHOTOGRAPHY IN THE SOUDAN.— It is an interesting fact that at least one of the special artists at present with Lord Wolseley's force in the Soudan is armed with a camera, and some of his first negatives have reached this country for development. No attempt is made to develop on the spot, and it is satisfactory to know that, in spite of the powerful element of chance involved in this arrangement, all the plates, with the exception of a few spoilt by the inquisitiveness of the Customs authorities, have turned out well. This result is the more surprising as no data as to exposure or subject accompanied the plates. What a sensation a series of instantaneous pictures taken during the actions at Abu Klea or before Metemneh would create! But, we fear, under those conditions, less peaceful weapons than the camera would be *de rigueur*.—*British Journal of Photography*.

Photographs for 1976.—Mr. C. D. Mosher, a photographer of Chicago, has collected photographs of prominent people with the object of having them sealed up in a memorial safe and kept in the city vaults until the next centennial. The Mayor and City Council have awarded the necessary space for the reception of the safe.

MR. JAMES DOUGLASS has opened a depot for photographic supplies at *Jacksonville, Florida*. Any of our friends, professional or amateur, that wander in that direction will find it more convenient to obtain what they need there, than to carry material with them. We cheerfully recommend him to the trade.

EVERYBODY knows Hugh O'Neill. Well! He writes as follows regarding the Standard Plates:

"They are *wonderfully rapid*. I had a little subject on roller skates. I thought here is a good chance to try them. The result was a success—less than ¼ of a second and plenty of time—*clear*, *brilliant and soft*, with the *finest printing qualities* I ever saw.

I want some bad. H. O'NEILL."

PROF. CHANDLER'S article on "Photography" is unavoidably omitted from this number, as he has been too busy to complete the copy in time to go to press.

THE report of the Photographic Merchants' Board of Trade has also been delayed, on account of our being unable to obtain the matter in time.

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SYSTEMATIC INSTRUCTION FOR PHOTOGRAPHERS.

"I WISH I could have had a chance to learn something of science when I was a boy" are words that were uttered recently in our presence by a well-known photographer. How often we hear them spoken by various members of the photographic fraternity. When we stop to think of their meaning and the origin of the feelings that called them forth, we are not surprised that we hear them so frequently. The art of photography to-day is not what it was forty or fifty years ago; the men that practice it are not working with the same simple principles that were then known. At that time but a few leading minds paid any attention to the development of the scientific study of photography. To-day the ranks of the photographic army of workers include scores of the most intellectual men on the face of the globe; and the progress inaugurated by these minds, equipped with the knowledge of the highest principles of science, is making many of the older members of the fraternity long for a similar training, in order to keep pace with advances of the art. What can we do to satisfy this longing for more accurate information among older photographers, and prevent a similar feeling in the rising generation that will devote themselves to the study of photography?

To those who are too far advanced in life to think of going back to receive instruction in first principles, we would recommend to devote a definite amount of time to the reading of the various books published from time to time by the leading lights of the photographic world. Every now and then one of these men issues some treatise upon researches into the more advanced fields of our art, and the progress he has made should be carefully noted, and, if possible, the new principles pointed out should be applied to every-day practice. Above all things, we would recommend our older brothers to read the photographic journals. Not one, nor two, but half a dozen if possible. Read just as many as you can find time for; and by this we do not mean look through them, but endeavor to find out what the writer is aiming to impart. In thus trying to keep abreast of the times, apply the principles to your daily practice, and you will be surprised to find that you too will make discoveries that you little dreamed of. In what do these leaders in the photographic world differ from their more ordinary brethren? They simply do not work in ruts, but strike out into new fields, and with careful thought and patient, systematic work, achieve heights accessible to all who work to attain them. We therefore say to the older members of the fraternity: Read the photographic journals and work at something new all the time, and we promise you success and the inexpressible satisfaction of attaining something new.

With regard to the younger members of our guild, we can see something definite to recommend. Like every other profession, it is essential that young photographers should have what is termed a liberal education. By this we do not mean a profound knowledge of the classics, nor a deep insight into the mysteries of mathematics and the method of least squares; but we do mean, that the younger members of the profession should have a realizing idea of the world around them, derived from a study of the principles of science. By the principles of science is understood those laws that underlie the very nature of matter and the forces that control it—heat, sound, light, electricity, and, above all, chemistry in its multitudinous ramifications. We don't expect these young photographers to become experts in these matters, any more than we do the younger members of any other profession; nevertheless, a fair knowledge of them is now considered necessary in a liberal education. Some of our brethren will probably say, "but you are talking as if it was necessary for a photographer to have a college education in order that he shall succeed." To which we answer, that, if a so-called college education is the only way of attaining this end, then, yes, we do. But we are glad to say that it is by no means necessary to go to college to attain this knowledge. Throughout the length and breadth of this favored land are scores of institutions where the knowledge we speak of can be acquired for the merest trifle in the way of expense. In all the principal cities are to be found institutions like the Cooper Institute, New York, where a most thorough instruction in the principles of science can be had for almost the asking.

But leaving these institutions out of the question, which of our colleges is *not* open to the poorest in the land if he has a mind to work to enter them? We do not know of one, and we do know of many young men with determination, who have graduated from them with empty pocketbooks, stout hearts, and a liberal education, and which to-day are leading citizens wherever they are found. In fact, thanks to the generous spirit of a free people, there is no separate education for rich and poor in the United States, and every young man with energy has an equal chance with his richer fellow.

Independently of how it is attained, the kind of education that we have mentioned is indispensable to the rising photographer. Having acquired this elementary knowledge of matter and force, he should then take up the more intricate parts of those sciences that are most necessary in the pursuit of the photographic art. Mr. Ryder, at the Cincinnati Convention, put this in a very few words, and as we most heartily agree with him, we repeat them here for the benefit of our readers. He says:

> "I hope the time is near when regular schools of photography will be established and sustained in this country, where the learner may have the benefit of good teaching under competent professors, where study shall be necessary; that he should be compelled to pass a rigid examination in chemistry, optics, physics, light, lighting, composition and drawing, before he should be entitled

to a diploma, which should be his voucher for competency."

The regular schools of instruction in photography mentioned by Mr. Ryder, do not seem to us at the present time to be within the limits of our hopes, however desirable they may be in the future. But a systematic course of instruction in our various institutions of learning is entirely within their scope, and, we are glad to note, has already been started in several of them. Columbia College has for many years had a well equipped photographic laboratory, with a thoroughly competent gentleman in charge of it; and it needs very little suggestion to her progressive Board of Trustees, if there is need of systematic instruction in photography, for them to organize such a system. The Boston Institute of Technology has already made some progress in this direction; Lehigh University is now fitting up a regular photographic laboratory; and we hear the same of several other institutions. We most heartily wish them success, and must congratulate photographers that a thoroughly good system of instruction will soon be within their reach. There will no longer be any need of excuses for ignorance in this direction, and we are sure the opportunities will be eagerly grasped by all.

One word of warning before we close. Don't expect that the mere acquisition of knowledge will make a man a good photographer. These young graduates in the photographic art will think they know it all. Elder brothers, be patient with them; they are simply trying their young wings, and the process is often practiced with little respect to the feelings of others. Rebuke them, but do it kindly; repress them just a little, but do it gently; and after a time you will look with admiring eyes upon the progress of these new disciples in our beautiful art.

Many years' acquaintance with students leads us to make these remarks. The practical man is often too severe upon the beginner in life's struggles; while the beginner, full of enthusiasm, energy, and with a world of promise before him, often forgets that age begets wisdom, and

Knowledge and wisdom, far from being one,
Have ofttimes no connection. Knowledge dwells
In heads replete with thoughts of other men;
Wisdom in minds attentive of their own.

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[*From the Author.*]

BROMIDE OF SILVER RESIDUES FROM OLD GELATINE EMULSIONS.

BY DR. J. M. EDER.

In recovering the silver from old gelatine emulsions, the gelatine is generally decomposed by strong acids or lyes, causing a separation of the bromide of silver, which can be collected upon filters.

These silver precipitates are very rich in silver (bromide, iodide or chloride of silver), and contain also more or less gelatine and moisture. The following table shows the results of the chemical analysis:

	I.	II.	III.
Water	1.25	0.58	....
Organic substances (gelatine)	4.89	10.37	....
Bromide of silver	92.04	....	....
Metallic silver, extracted by nitric acid	0.57	....	....
Total contents of metallic silver reduced by soda and cyanide of potassium	52.09	44.82	35.07

Sample No. I. was bromide of silver, separated from the emulsion with sulphuric acid and well washed, so that the residue could be crushed easily to powder; exposure to light had turned the bromide of silver gray.

No. II. was another sample badly washed, held together by gelatine in pretty solid pieces as a crumbling mass. It contained double the quantity of gelatine that No. I. did.

Lastly, No. III. was tested only for its silver. This was residue, obtained from emulsions and old developed gelatine plates by washing and decomposing with sulphuric acid. This residue contained oxalate of iron and fragments of varnish; therefore the diminished quantity of silver.

If the emulsion is decomposed with lyes (for instance soda), the separated silver precipitate has a dark color, because it contains metallic silver besides the bromide of silver.

It can be generally accepted that acid or alkaline precipitated emulsion-residues contain approximately a third or one-half of their weight in metallic silver.

Translated by H. D.

TALKS WITH PHOTOGRAPHERS.

BY AN OLD DAGUERREOTYPIST.

My first talk with photographers, or rather with daguerreotypists, dates back to a time when New York City could boast of not more than a half dozen professional artists in this line—(Question, shall I call them artists?)

My first interview with these was in relation to learning the art. The secrets of which art, I subsequently discovered, was not much better known to them than to myself, which was absolutely nothing.

But my being entirely ignorant of the business appeared to be no objection to them, as they could the more easily impress me with the idea that I could learn all about it in a few weeks. From that time to this I have been trying to unravel its secrets, and yet find myself no nearer the end of my lessons than when I first began. In fact, it now seems as though there was no end to this special field of art-science, and there appears no hope for any one, even its most diligent student, to more than master some one of its multitudinous applications to commerce, to science, or to art. I was further encouraged by the piles of money I would be able to make by simply paying one hundred dollars for instructions, independent of the implements I would need if I undertook the business on my own account. This I was told would require, perhaps, a couple of hundred dollars more. These amounts being something less than the actual sum in my possession, I resolved to make the venture. It was not many weeks, however, after I actually commenced the work, that I became thoroughly disgusted with the business. It was not only exasperating on account of the uncertainty and perplexity of getting a picture; but it was quite as uncertain in finding, and when found, of pleasing your patrons. Hence arose the custom of always taking the pay before the sitting. As the majority of our patrons were seldom entirely pleased with their first venture, they would rarely patronize the same place more than once until they had given all the other artists within their reach a trial; and thus the business was pretty evenly divided. In fact, it was so much divided that each daguerreotypist contended that the business was overdone! That there was double the number in it there should be. In fact, each considered it a business only sufficient for himself! And felt quite confident that he could satisfy and supply the demands of the entire city so far as making daguerreotypes were concerned. Each one, therefore, was striving to hit upon some new dodge that might swamp his competitor, and the most trifling advancements and improvements were held as secrets of the greatest importance, and could be wrung from their possessors for a sum only a fertile imagination could think of naming.

For example, one hundred dollars for

learning that a plate could be properly cleaned only with simply rotten stone and water! Twenty-five dollars for learning how iodine and chloride of iodine would make the most approved daguerreotypes; and ten dollars for a receipt for making a background that would harmonize with all sorts of colored dresses, and every variety of complexion.

If there was any one organ of a daguerreotypist's cranium that was exercised more than another, it was the organ of secretiveness. If he found anything new—and such revelations were of daily occurrence, he became wonderfully expert in exciting the curiosity of his brother artists (I almost hesitate to call these men artists), while at the same time the tenor of his mysterious discourse rarely failed to mislead his attentive and anxious listeners. This art of hiding with the tongue the true secret of success, and making speech the mask of thought and deed, was one of the accomplishments the daguerreotypists seldom failed to learn. And if any were found too simple to practice it, he was usually the victim of all the others.

Under such a pressure every one was obliged to work out, as best he could, the secrets of the art, and thus the same principle or problem was demonstrated by a variety of methods, all more or less original as well as useful and pleasing in their final results.

The spirit that ruled the early daguerreotypists has never entirely died out, and we occasionally meet photographers who, if we should accept *their* estimates of their own personal skill, we should be forced to place them at the head of the ranks—and thus being somewhat ranker than the rest, they are the first to complain of the mischief done by encouraging amateur work, photographic societies, and photographic literature. Like the early daguerreotypists, they are always contending that there are too many in the field.

That photographic secrets should under no pretense be revealed—that it is by these only that they can hope to occupy lucrative positions, and thus force their employers to maintain dignified prices, even though they prove to be unremunerative to the capital invested.

If the doctrine such men advocate had prevailed, we should have no amateurs, no photographic journals, no photographic societies. Under such a regime every photographer would be left to his own personal skill and personal influence in arousing a public interest sufficient to make the art either useful or popular. Such a course would no doubt lead to the most disastrous results—and in a few generations photography would be known only as one of the lost arts. The fact is that as photographers have multiplied, so the uses of the art have increased. It has required the ingenuity of a great variety of minds and the labor of innumerable hands to keep the art alive in the public mind. And so, by this combination of power, photography has been constantly increasing the number of its uses, and obtaining a more permanent position in the commerce of the world.

In no part of its past history has the signs of advancement been so manifest as at the present hour. Since the successful introduction of the gelatine dry-plate, a greater variety and better quality of talent have been actively engaged in it, and will, without doubt, work out problems by which the uses of the art will be increased a hundred-fold.

We should, therefore, hail it as a good omen when we see large numbers taking up photography, either as amateurs or professionals; for the more mental capacity and mechanical skill that can be brought to bear on the art, the greater will be its prosperity and the success of all connected with it.

FLUORESCENCE AND PHOSPHORESCENCE.

BY L. H. LAUDY, PH.D.

Lecture before the Photographic Section of the American Institute.

In connection with the two subjects of this lecture, it may be as well to consider another, that is, monochromatic light, with which they are intimately associated. Therefore, after disposing of the subjects of Fluorescence and Phosphorescence, we will consider some of the effects of monochromatic light.

Fluorescence.—Sir David Brewster called this the internal dispersion of light, which he first noticed in an alcoholic solution of chlorophyl, in 1833. Some years later Sir John Herschel published a paper entitled "Superficial Color in a Colorless Liquid." It was found that an acid solution of sulphate of quinine gave rise to this phenomenon in a remarkable degree. That is, the solution appeared colorless by ordinary light, but when viewed by violet light, it seemed to be opaque. The question was asked: "What is the nature of this blue light?" Herschel tried to answer this question and made many experiments. He called it epipolic dispersion, and that which passed through the solution epipolized, meaning surface dispersion. Sir David Brewster took up the subject and examined this fluid, and experimented upon its peculiar properties. He called it internal dispersion, and among other things, found that certain kinds of glass exhibit this in a remarkable degree. It remained, however, for another investigation to explain the cause, and this was made known by Prof. Stokes. Knowing that when light was passed through a prism it was decomposed, that the length of wave for each color was different, and that the ultra violet portion of the spectrum was invisible, because the vibrations failed to excite the eye. The eye being found capable of taking in those vibrations only which range from 789 millions of millions of vibrations in a second, and of a wave length between $\frac{1}{65000}$ of an inch for violet light, and $\frac{1}{37000}$ of an inch for red. That portion of the spectrum which comes within this range is small compared with its length, being only $\frac{1}{14}$ of the total solar radiations.

Prof. Stokes found that it was possible to alter the rate of vibration of these various solar radiations, and thus produce a change in their refrangibility. In other words, in fluorescence, the length of the wave is increased, and its velocity of undulation is diminished. The vibrations of the ether in the incident ray appear to excite disturbances within the complex molecules of the fluoresent medium, whereby new vibrations are excited in the ether, differing in period from those of the incident ray. The portion of the light which has produced this molecular disturbance is used up, or absorbed, and thereby lost to visual perception, just as heat is converted into mechanical work. By this means we are enabled to made the *invisible visible*, that is, to bring out that portion of the spectrum that to our eyes produces no visible image.

By tracing some design upon a piece of white card, by means of a solution of acid sulphate of quinine, and allowing it to dry; a scarcely visible impression of the design is noticed upon the card. If this is now photographed it will be found that the quinine has had a most remarkable effect upon the light, making it highly non-actinic, and thus the design comes out in sharp contrast to the white card upon which it was drawn, although the contrast to the eye is scarcely perceptible. If three bottles be filled, one with ink, another with water, and a third with solution of acid quinine sulphate, and the three are photographed together, it will be found that the water appears clear, but the ink and the quinine solution are scarcely distinguishable upon the photographic plate, both being without any effect upon the sensitive surface. To the eye the quinine solution appears as clear as the water ; to the sensitive plate it is as black as the ink. Dr. Gladstone made experiments of this character as long ago as 1874, and published an account of them.

In most cases it is the violet or ultra-violet rays that produces these effects ; it is not found that light of every refrangibility produces fluorescence. As the most refrangible rays are the most active in producing fluorescence, it is natural that this effect should be most strikingly exhibited by the light of flames which are rich in those rays. Prof. Stokes discovered two laws in regard to fluorescence: 1st. That the fluorescent rays are always less refrangible than the exciting rays. 2d. The same rays that produce fluorescence in a substance are always absorbed by that substance. The following substances are particularly remarkable for their fluorescent properties : Eosine, tetra-brom-fluorescine : fluorescine, resorcin-phthalein ; uranine, sodium salt of fluorescine ; primrose, methyl or ethyl eosin ; magdala red ; bichlor-anthracene; bisulpho-bichlor-anthraquinic acid ; acid quinine sulphate ; esculine ; thallene ; petrolucene, and uranium glass.

Phosphorescence.—Fluorescence may be regarded as phosphorescence remaining only $\frac{1}{500}$ of a second after removing the exciting cause. Phosphorescence is fluorescence continuing after the removal of the exciting cause.

The attention of philosophers was in early ages directed to various phenomena resulting from the properties of light, and among these was noticed the remarkable phosphoric appearances of certain animal and vegetable bodies.

Ancient writers allude in general terms to the existence of luminous insects; the most early mentioned species is supposed to be the Lampyrides or flying glowworm.

The Greeks included all shining insects under the name Lampyris, and the Latins called them *Noctiluca.*

This peculiar phenomena of shining in the dark is exhibited by bodies belonging to the three kingdoms of nature, mineral, animal and vegetable, and by the two latter in both life and death during growth and decay.

Dried wood and fish at a certain stage of decay disintegrates and crumbles down, and becomes luminous in the dark.

Little attention was paid to this fact until phosphorus was discovered by the Alchemist Brand, of Hamburg, who prepared it by a secret process.

He sold the secret to Krafft, from whom it appears that Kunkle learned what he knew, and published in 1678 a pamphlet on this remarkable light-giving product.

This substance was looked upon as the most wonderful and interesting of all chemical discoveries—it sold for 15 ducats per oz.

Krafft exhibited it as one of the wonders of nature to the various crowned heads of Europe, and in 1677 to King Charles II. of England.

It was found that when this phosphorus was in a low state of combustion, which takes place when it is exposed to the air, it gives off acid vapors which shine in the dark with a faint bluish light; hence the term phosphorescence has been applied to all bodies which exhibit a similar luminosity.

There are two distinct conditions of phosphorescence; one is the *chemical*, the other the *optical*. It is with the optical phenomena that I will deal this evening.

A large number of bodies have this power of shining or emitting light in the dark.

The most familiar is that exhibited by the glow-worm and fire-fly, and needs no description, for all are familiar with the light emitted by these insects.

These bodies do not belong to the class of phosphorescent phenomena caused by the absorption of light; they are to be regarded as self luminous, in consequence of chemical and physiological processes.

With these may be classed the numberless small marine animals, as the *Crustacea*, *Medusa*, *Polypora* and Noctiluca maliaris.

Few visitors at the seaside can have failed to observe on a summer evening the waters made luminous with a phosphorescent light. The ripples as they reach the beach sparkle with scintillations, and the waves produced by boats blaze with a pale light. You can trace the path of a boat by the long wake of light that streams behind like the train of some vast sky-rocket.

All this is due to the presence of infinite numbers of living atoms called noctilucæ.*

This substance might be called organic phosphorus. It is the substance that causes phosphorescence in animals.

It is secreted by a special organ and issued in producing light nearly as fast as formed.

In common with all created things they have these luminaries to secure some important purpose, although we may not know their exact mode of apliance. They are not altogether without their value, for in some countries the glow-worm and fire-fly are made subservient both for ornament and use.

In the vegetable kingdom we find the decayed bodies of plants and old dried wood giving out this peculiar light. Certain flowers of living plants emit a sudden flash of light a little after sunset, others have a faint continuous light in the dark.

By far the larger number of available substances are found in the mineral kingdom. The most important of which are some varieties of the diamond, fluorspar, chlorophane, and then certain mixtures of calcarious compounds with Strontium, Barium and Sulphur.

These mixtures have been known for many years, and were first described by an English chemist, named Canton, about the year 1768, and known in the old chemical books as Canton's phosphorus. Specimens of these preparations, sealed in glass, and bearing date 1760, are still in existence, and appear as sensitive as when freshly prepared.

These phosphorescence powders are prepared by heating various forms of limestone or oyster shells with sulphur and strontium or barium compounds, in a closed vessel for a certain time to a high heat.

These are known as phosphorescent, or luminous powders, and according as the mixtures have been prepared, are called :

Bonnonian Phosphorus.
Strontium "

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* Chemical News, Vol. XXVI, 1872, P. 130. Noctilucene, Dr. T. L. Phipson.

Cantons Phosphorus.	Oyster shells and sulphur.
Homberg "	Sulphur and calcium chloride.
Baldwins "	Sulphur and calcium nitrate.
Osanns "	Sulphur and Antimony.
Wachs "	Sulphur and Arsenic.

and others that I will not occupy your time with ennumerating.

Certain of these bodies when thrown into vibration, under certain conditions, emit a faint light without perceptible evolution of heat. The bodies have no power to shine in themselves; they must be excited either by *heat*, *electric discharge*, *mechanical action or insolation.*

The method of *insolation* is the one usually employed, and is accomplished by exposing either to sunlight, electric or magnesium light.

When these phosphorescent bodies are exposed to light, a vibration is supposed to be set up in the molecules forming these powders, which, when removed to the dark, remain luminous until the particles fall back into their original positions of rest.

The duration of luminosity varies according to the method of preparation and the time of exposure, lasting from the fraction of a second to many hours.

The color emitted varies in an equal degree. Some powders emit a white light, while others shade into *yellow*, *green*, pale *blue* and *violet.*

There are certain conditions which make them inoperative at once—a low temperature is one of them—while the reverse of this will increase the brilliancy.

This condition is not communicated from one body to another.

A new impetus was given to this subject a few years ago, when an eminent English chemist, W. H. Balmain, secured a patent on a mixture of a phosphorescent powder, and a vehicle to carry it, and produced what is now known as Balmain's luminous paint, which has now become an article of commerce.

The peculiar efficiency of this paint is due to the careful and accurate regulation of the temperature and duration of heating.

If objects are coated with this paint and exposed to light and then placed in the dark, they become luminous and retain their sensitiveness so long as the medium or vehicle that carries the luminous powder remains unimpaired.

This paint has been used for fence posts, bell pulls, door knobs, names of streets, numbers on houses, and so forth, in towns and cities. For coating buttresses of bridges, all kinds of buoys, painting a band six inches wide around ships (to make them visible a long distance off) and for ship's cabins, are some of the nautical uses. In spirit and liquor vaults, to avoid the use of luminous flames, and in powder magazines for the same purpose. Also, in railways, hospitals, theatres and music halls. In regard to the latter places, it is well to remark that, since the terrible accident at the Ring Theatre, in Vienna, where 700 lives were lost, the use of this paint has been applied with great success; the words "exit," "keep to the right," "caution," "stairs," being used. At Munich, also, at the Royal Court and National Theatres, several sheets of paper were painted with luminous paint, and the words "Ausgang," "way out," were plainly seen when the gas was turned out, and the stairs could be reached without any difficulty.

Another use to which this paint has been put lately is peculiar. In the Philippine Islands, small metallic plates, coated with the paint, are so disposed as to afford ready guidance at the first intimation of an earthquake, for the inmates to reach the street doors and make their escape from the buildings in danger of becoming ruins suddenly.

Monochromatic Light.—To understand this part of our subject it is important at the outset to accept the wave theory of light, which teaches us that differences of color are only differences of wave length. Here is a drawing of the solar spectrum, made with a diffraction grating, which puts the colors in their true relation. The red waves are long $\frac{1}{37000}$ of an inch, while the violet waves are short $\frac{1}{65000}$ of an inch. If we take any of these colors and separate them from the others, and with that color illuminate any colored object, our sensation of color will vanish. For example, I here take some alcohol in which is dissolved some common salt, and by igniting it I obtain an intensely yellow flame. I obtain a yellow light and a yellow light only; a light of one color only, and therefore called *monochromatic light.* All the beautiful shades of color now fade from us. A red rose exhibits no more color than its leaves; the bright colors of fabrics are reduced to black or gray. The human face assumes a color under this light which is repulsive and death-like. This is all due to the fact that the objects illuminated are incapable of reflecting yellow light, or are incapable of taking up and throwing back the light waves of the same rate of vibration that are emitted by the *yellow monochromatic* light.

[The lecture was profusely illustrated with experiments and brilliant examples of phosphorescent and fluorescent substances.—*Editors of* BULLETIN.]

PARAGRAPHIC PENCILINGS.

BY G. H. LOOMIS.

CONCERNING photographic associations, I have written before, but they are, or should be, of sufficient importance to call for frequent mention in the journals devoted to this branch of art. If I read and observe correctly, there are not enough of them, nor are those already organized well attended and sustained. Every city or county containing a dozen or more live photographers should have its club and rallying point for conference and discussion, and every member should become an active contributor of practical thoughts and ideas—these being of more importance than financial fees—to keep the monthly meetings interesting and profitable.

While this suggestion, we presume, would find ready endorsement by a large portion of the more intelligent and progressive photographers, they would not care to associate or re-associate where and with whom their experience had proved the investment of doubtful value, particularly so in the matter of wasted time. While it is not expected or supposed that every member composing these associations will prove a dictionary of ready reference, or a cyclopedia of general information, or possess brilliant powers of oratory, it is nevertheless reasonable to expect that where a table is set somebody will provide a suitable repast, lacking which, the guest will go away—with no inducement to come again. Quite a number of associations have been organized with a membership numerically sufficient for good results, but after a few months have sickened and died for lack of vitality. A few studious members in good faith and with a fraternal spirit were ready with the results of their experience and practice, costing them very likely a good deal of patient effort and care—but willingly imparting it to others—only to find perhaps that some *spongy* member, perhaps a visiting craftsman, with note book in hand gobbling up the information and stealing away to his sky-loft with a boast that he has the secret of his more honorable rival's success--and that he only charged half price for the same results. I do not know that these cases are numerous, but I have met such only to despise their questionable business methods.

By properly organized and associated effort photographers can be very helpful to each other in developing the possibilities of the beautiful art they have chosen, and in no more efficient way than by mutual and friendly interchange of ideas obtained from daily practice, and if there be some, as doubtless there are in all associations, who have not the confidence and ability to *impart* much light by personal speech or written discussion, they should at least, in *receiving* valuable thoughts and suggestions, act the manly part of due appreciation and fair reciprocation.

It is not enough to open and close the meetings in due form; every session should have its previously assigned subjects and speakers, and these should be on hand at the time and place of meeting.

Without an interested membership it is folly to begin or continue. A goodly number, of course, adds to the sociability of the evening, but well-prepared points of practical information, gleaned from daily experience in the laboratory, will, after all, prove the inspiration of the meeting, and more than any other, add to its membership. We venture to say that in no other branch of industry is there a wider or more interesting field of research, or one with more promising results. To be sure, the margin of profit, by reason of an unhealthy competition, has become altogether too narrow and circumscribed to afford the practitioner sudden wealth, but time and patience will regulate this matter.

The amateur may ply his practice for awhile "for the novelty of it," regard less of an income, but after a while he will get tired and cry for bread as a necessity of his being; and yet the amateur has his compensation and pleasures.

We have repeatedly commended the National Organization as deserving of a generous and continuous support, and renew the suggestion that the craft so arrange their plans as to suspend business for the week appointed for the Annual Session and go to Buffalo, it being a good point for a summer trip, in connection with the convention attractions.

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PROMISING as the new rapid printing process is, it would be as well to remember that it has but recently emerged from the experimental stage. It is natural to be enthusiastic over such an advance as rapidity and possible permanency indicate; at the same time, experiments are one thing, and solid every-day working experience another. —*Photo. News.*

OBITUARY.

WILLIAM H. RHOADS.

THIS well-known photographer of Philadelphia passed away at Melrose, Florida, on Feb. 3, his death being due to chronic bronchitis. We copy the following from the *Philadelphia Photographer:*

"Though only about fifty years of age, he was one of the earliest photographers in this city, and one of the best. He was a regular attendant upon the N. P. A. conventions, and local secretary of the one held in this city, in 1872. His pleasant manner made him a great favorite. Alas! too close attention to business broke down his health, and he was compelled to dispose of a fine establishment, and fly to Florida to recuperate. He recovered his health partially, but a return to this city caused him again to break down, and again to appeal to a warmer clime for health. It was too late. He passed away gently—

conscious to the last—and a great gap is left in our circle of warm personal friends, and our art has lost one of its best men. Mr. Rhoads leaves a wife, son, and daughters.

To the above we would add that we sincerely regret the loss or so good a member of our fraternity. Our acquaintance with Mr. Rhoads covered a series of years, and we can also bear testimony to his pleasant manner and genial companionship. Photography has lost an ardent worker in her domain, and the fraternity one of the warmest hearted of its brothers.

EXPOSITION JOTTINGS.

[*By our Special N. O. Correspondent.*]

According to promise in my last, I will now proceed to describe in detail the Photographic Exhibit.

Ascending the stairway to the south gallery of Music Hall, on the right of partitions, we find the fine exhibit of Messrs. W. H. Jackson & Co., of Denver, twenty frames of views from stereos, and 8 x 10 to 18 x 22 and larger —all excellent work.

The views in Mexico are especially notable. The grand old cathedral, the huge cactus and strange tropical plants, the wild mountain scenery and broad valleys being all clearly delineated in beautiful tones, with no lack of detail in light or shadow. But, unfortunately, the eight lower frames were hung flat against the unseasoned pine, and the dampness has struck through them all, and they are badly yellow and faded, being mildewed in places. It is shameful to see work so good so badly treated.

The next exhibit on that side is Mr. Taber, of San Francisco, who has sixteen large frames of 8 x 10 to 18 x 22 photos, containing nearly every phase of the grand and beautiful in nature and art, from

"The mountain torrent foaming down,
The sullen wave with crested crown,"

to giant rocks whose feet seem plunged in gorges of solemn gloom, while "eternal sunshine settles on their heads." In short, the wonderful scenery of California delineated in a manner as grand in photography as the scenery is in nature.

The next 200 square feet of space is vacant. Following that is the exhibit of Mr. Lillenthall, the only New Orleans portrait photographer who has sufficient pride in his work, or sufficient enterprise to make a showing. He has fourteen frames, one large one in the center very artistically arranged. Mr. Lillenthall not only makes a fine exhibit in elegant frames, but he shows a commendable pride in marked contrast to some others, for he has covered the coarse cotton ground with rich wine-colored cashmere, tastefully draped and bordered with gilt molding.

Mr. Lillenthall evidently believes that, "if a thing is worth doing at all, it is worth doing well."

Then follows about 1,000 square feet of vacant space, only broken by a solitary frame, which contains a picture so remarkable that it requires more than a passing notice.

It is a heavy gilt frame containing a bevelled plate glass about 24 by 36 inches, with a half life-size, three-quarter length figure of a Catholic priest done on the back in the semi-transparent, waxy, wooly way that has delighted and deluded so many would-be artists, and swindled so many of would-be artistic taste through all its varying phases, from the original Hallotype and ivorytype down through the whole category of double convex glass abortions that have deceived and disgusted the public, from the patrons of some of the best known and largest photographic houses in the United States to the artistically ignorant but ambitious people of every country town, who have paid tens of thousands of dollars in the aggregate to be taught what was worse than useless when known. The only form in which such pictures would ever be artistically admirable is in the smallest miniature size. The larger they are the worse they are artistically, until swollen to such proportions as this they are simply monstrous; as a mosquito would be the size of a horse; a flea the size of an elephant.

And yet one cannot help admiring the courage, patience and misplaced skill that has made this picture clean, flawless and as good as that style of picture can be.

Such artistic devotion guided aright might produce results worthy of all praise, and it is to be hoped that Miss Riera may have her artistic talent turned to nobler uses.

Next we find eight frames by Geo. E. Mugnier, with stereo and 5 x 8 views of New Orleans, clear, bright, full of detail and from well-chosen points of view, Mr. Mugnier's pictures are fully as good, if not better, than the average work of the Centennial Photo-Company here from similar subjects.

The next exhibit, seven frames, by Gubleman & Hargrove, of New York, views and interiors, is the finest work in pure photography on the walls.

The clearness, brightness and extreme sharpness, without a particle of hardness or harshness anywhere, is marvelous. And to show how perfectly these fine results are under control, there is through all the same identity of tone and chemical effect, even with widely differing subjects; scenes with broad, strong lights, and those with dark and massy shadows, are brought out with the same uniform excellence, thus proving the perfect mastery of the chemical manipulation in carrying out the artist's chosen ideal.

The Moss Photo-Engraving Company of New York have seven frames, showing in various ways the commercial advantages of this application of photography. There are negatives and photos of President Cleveland, with printing blocks and engraved prints made from the same, thus showing all stages of the transformation, with how much is lost and how much gained by the change.

Across the aisle we find some good solar prints by Mr. Long, of Quincy, Ill., also the Platinum Enlargements of McCollin, of Phila., in adjoining space.

McCollin has a fine show, with prints almost good enough for pictures as they stand, needing but few skilled touches of the artist hand to make them bold and brilliant portraits.

On the other wall, returning, we find Hardy, of Boston, with a small but elegant exhibit.

Mr. Hardy's pictures are uniquely arranged, on a rich silk ground, and every picture in the collection is good. Ladies, fair and stately; children, dainty and blooming; gentlemen with thought and intellect, look out from his frames in natural attitude, and with a satisfying sense of completeness as finished pictures. Mr. Hardy's exhibit has another satisfying quality; it does not make you feel that the artist has attempted all he knew—and a little more; on the contrary, you feel conscious he has a reserve of power; he could do many things, but he has chosen to do only what he thought it best to do. An excellent example.

I think your BULLETIN *just the thing.*

J. S. MASSUK,
Michigan.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

REPORT OF THE REGULAR MEETING OF MARCH 10, 1885.

THE gentlemen present were called to order at 8.25; *President* BEACH occupying the chair.

There being no communications, a synopsis of the minutes of the last meetings was read by the Secretary, and adopted.

Messrs. James G. Wagstaff, J. H. Maghee, Edward M. Franklin, C. C. Roumage, Jr., and George Boynton were then elected active members.

The Secretary read the following reports from the Committee on Books and the Committee on Gelatine Plates, which had been handed to him:

REPORT OF THE COMMITTEE ON BOOKS AND PUBLICATIONS.

The Committee on Books and Current Publications desire to acknowledge receipt of *Walzl's Monthly*, from Richard Walzl; "American Carbon Manual," by E. L. Wilson; "The Tannin Process," by C. Russell; "A Popular Treatise on Photography," by W. H. Thornthwaite; "Photographic Manipulation," by S. R. Divine; "The Silver Sunbeam," by J. Towler, fifth edition, from Mr. F. C. Beach; "The Chemistry of Light and Photography," by H. Vogel, from Mr. C. W. Canfield.; "British Journal Almanac and Photo News Year Book," from the *Photographic Times* publishers; "Manual de Touriste Photographie," by Léon Vidal, from Mr. Thos. Bolas, through Mr. F. C. Beach; also the *St. Louis Photographer.*

JOS. S. RICH, *Committee.*

REPORT OF COMMITTEE ON DRY PLATES.

MR. PRESIDENT:—During the past month your committee have received one package of plates from H. F. Neidhart, Chicago, Ill.; three packages from the St. Louis Dry Plate Company, and two packages from the Cramer Dry Plate Works.

They have partially tested twenty-two different brands manufactured by twenty different makers. The number of tests made is one hundred and nineteen; thirty-two of which were made by sunlight, twenty-four by Warnerke's luminous tablet, and sixty-three by the kerosene lamp and radiometer. The kerosene used in these tests is 150 degs. fire test. A board of officers appointed by the Secretary of War in 1879, of which one of your committee was a member, made a careful and protracted investigation of various oils by different tests and experiments. The oil now used by your committee is the oil recommended by that board and now used throughout the army.

As these tests are still incomplete it is hardly practicable or just to report partial results, but any member of the Society will find the record of all tests made in the dark room, which is always open for inspection.

The committee have plates from twenty different manufacturers, eighteen of them located in the United States, one in England, and one in Belgium.

In testing these plates, the developer recommended by the maker of the plate is used, also a standard developer composed of

Water	1 ounce.
Dry pyro	2 grains.
Carbonate of soda	5½ grains.
Sulphite of soda	11 grains.
Carbonate of potash	5½ grains.
Yellow prussiate of potash	5½ grains.

Among the developers recommended by the plate makers, nine are ammonia, seven soda, six iron, two potash, and two soda and potash. With only two or three exceptions, we found the standard developer more powerful than those recommended by the plate makers. In one case where the plate-maker's developer showed fifteen as the last number with a Warnerke screen, the standard developer showed twenty with the same exposure.

Apparently, the yellow prussiate of potash in the standard developer allows us to use less pyro. In one case 2 grains of pyro in the standard developer gave as good results as 5 grains in the makers.

We find the standard developer works well with every plate so far tested, although it requires a bromide on some of the extra sensitive plates to prevent fogging.

We are not always able to determine just what the makers mean by their formulas for developers.

Some use the very uncertain and indeterminate saturated solution, while the majority neglect to state whether their salts are to be used dry, granulated, or crystallized. As some of these crystals contain over 60 per cent. of water, it would seem that a developer made with them would be much weaker than one made with granules. It is claimed by some, however, that crystals are as potent as granules, weight for weight. Your committee hope to report fully upon this point at a future meeting.

The formula for the soda solution accompanying the Seed plates is as follows:

Water	30 ounces.
Carbonate of soda	10 ounces.
Sulphite of soda	10 ounces.

At a temperature of 59 degs. 30 ounces of pure water will dissolve about 19 ounces of carbonate of soda. The same quantity of pure water will dissolve about 7½ ounces of sulphite of soda. In the above formula, if the carbonate is first dissolved in the water, we will have a half-saturated solution, and upon adding 10 ounces of sulphite more than half of it will be undissolved, and therefore wasted. If, on the other hand, the sulphite is first added to the water, we will have a saturated solution and 2½ ounces undissolved. Just how much carbonate this saturated solution of sulphite would dissolve would require a careful chemical analysis to determine.

The formula gives a wasteful solution of a variable and unknown strength.

The improper packing of plates is the cause of serious expense and annoyance to amateurs.

In most cases a pair of plates are placed face to face, separated by a pasteboard mat. We have tested a number of these mats, and also the boxes in which the plates were packed, and in every case found them heavily loaded with hypo. The effect upon the plate in some cases is most serious. In one case it had fogged seven-eighths of the plate, and caused such a deposit of metallic silver that the negatives looked like fine daguerreotypes.

This evil can be remedied, possibly cured, by varnishing the mats after they are cut, and also varnishing the inside of the boxes. In addition, the plates should be wrapped in "needle" paper, which is entirely free from hypo.

We feel confident that the majority of our plate makers do not realize the injury to their plates and reputations occasioned by their packing boxes.

Respectfully,
H. J. NEWTON, Chairman;
DR. JOHN H. JANEWAY,
D. H. WALKER,
C. W. DEAN, Secretary.
Committee on Dry Plates.

New York, March 10, 1885.

It was then moved and seconded that the reports which had been read be adopted and placed on file. (Motion carried.)

[The form in which the Committee on Dry Plates have stated the formula for the standard developer being somewhat misleading as to how the developer is prepared, we here give the correct proportions for mixing. The chemicals are dissolved in the following order:

No. 1.

Water	32 ounces.
Yellow prussiate of potash (480 grains to ounce)	3 ounces.
Carbonate of soda, dry or granulated (480 grains to ounce)	3 ounces.
Carbonate of potash (480 grains to ounce)	3 ounces.

No. 2.

Water	32 ounces.
Sulphite of soda (480 grains to ounce)	3 ounces.

For ordinary use, on a properly exposed plate, ¼ ounce of No. 1 is added to 1¾ ounces of No. 2, and, lastly, 4 grains of dry pro. If the plate is over exposed, the quantity of No. 1 may be diminished to a few drops and bromide added. If under exposed, No. 1 may be increased four times without danger of spoiling the plate.]

The President exhibited a sample of compressed pyro, and said it is made by compressing the pyro into tablets. The amount in each tablet is exactly 2 grains. I have tried it and I find that it works very nicely. It is a great convenience for those who wish to travel to have the pyro in this form.

Regarding a recent letter he had received from Mr. Henry Smith, of London, about the proposed international exchange of lantern slides, he said two methods of distribution are proposed. One is to divide up the aggregate number of negatives and positives which are received, and distribute them among the members who will take the copies, and after they have taken the copies of the lot they will return them to a central office, as you might say, and from there be again redistributed until all have had a chance to copy them. Another plan is (instead of sending out the negatives and positives in lots) to keep them at one place, and for one person to take, say, a thousand or more gelatine plates of a certain brand and expose them to these positives and negatives, a certain number being intended for each member of the exchange; then pack them up and send them off to each member, who will then develop his own transparencies or lantern slides. I should prefer that simply lantern slides be exchanged, with the privilege that any member desiring to make copies could keep them for that purpose. That, I think, is the most feasible plan. Mr. Smith suggests that allowing each member to be entitled to 125 exposed plates, it would, in the aggregate, amount to the consumption of 3,125 plates, which would be a good thing, no doubt, for some manufacturer of dry plates.

I am also glad to call your attention this evening to the presentation prints, although I do not know that we have quite as many as we expected; still, for the first attempt, it makes a very fair showing. Judges have been appointed to decide in regard to the prints, who are as follows: Mr. Abraham Bogardus and Mr. Chas. A. Needham. I believe Mr. Needham is present this evening, and he will report the award.

Mr. C. A. NEEDHAM then read the award, as follows:

REPORT OF THE JUDGES ON THE PRESENTATION PRINT.

To the Society of Amateur Photographers of New York:

MR. PRESIDENT AND GENTLEMEN,—Your committee appointed to select the Presentation Print for the current year, in accordance with the charge contained in your resolution of January 13th, 1885, have not made choice without difficulty, there being so many of the one hundred and forty-two photographs submitted which possess unusual merit.

The characteristics which, combined in the greatest number, made our final choice "A Winter Scene on Orange Mountain," are, many of them, delicate and effective attributes of its almost as successful competitors.

The pieces of most merit were found in landscape and still-life; the former of which, however, other considerations being equal, must be regarded as holding higher artistic rank, and evolving more inherent difficulties. We find in a picture of "Wild Ducks," and in twenty-four small instantaneous views by the same author, the perfection of mechanical excellence. By another hand, some interiors, floral pieces, and pictures with cattle, and a pretty conceit representing a Japanese doll left to view itself in a mirror, show invention, and are highly creditable. A schooner moored under the shadows of an imposing bank, and a fishing party, with figures clearly cut against an effective river-backing, show invention and exceedingly good artistic feeling on the part of their respective makers.

Besides the works we have enumerated, there are many others in the exhibit of special value and excellence which we have not time allowed to comment upon; and we congratulate the Society upon a display of so much really progressive work.

Respectfully submitted,
ABRAHAM BOGARDUS.
CHAS. A. NEEDHAM.
New York, March 10th, 1885.

The Secretary opened the envelope containing the name of the author of the print mentioned by the judges, and the *President*, in declaring the award, said: I am glad to announce that the picture which has received the presentation title is "A Winter Scene on Orange Mountain," and is made by Mr. Randall Spaulding, of Montclair, N. J. This is the one that has received the commendation of the judges, and we hope before the next regular meeting that a copy of this picture will be received by all members on record of this Society. It will be a very pleasant souvenir for the members of the Society's first year of existence.

I would like to mention right here that a very ingenious and simple way of stopping the light from the window when you are taking an interior is by suspending in front of the camera a little piece of card-board just about the size of the window as it appears on the ground glass. You can suspend it by having a wire project in front of the camera and cutting the size of card-board in such a way that it will just match the square of the window shown on the ground glass. While exposing for half an hour or so in that way, according to the time necessary, and removing the card for two or three seconds after the picture has been exposed so long, you will avoid the halation that comes from the window.

I have here this evening two or three kinds of apparatus, especially the Blair camera and apparatus, which I have been intending to show to the members for some time past.

The *President* then explained the advantages of the camera, its great length of bellows, its lightness, the simple method of arranging the ground glass, whereby it performed the functions of a clamp in holding the plate-holder in place. He also pointed out the compactness and lightness of the plate-holders, the mode of attaching an extension to the rear of the camera which permitted the use of large-sized plates; a rack and pinion movement connected with the front allowed easy focusing, and the bed being made in two sections, permitted the camera to be packed in a small space.

The *President:* Dr. Janeway, I believe, has a shutter which he will briefly describe.

Dr. J. H. JANEWAY: I simply present this shutter as a substitute for the ordinary drop-shutter. He then exhibited a model of an instantaneous shutter which worked with great rapidity, and remarked that any amateur with a pocket-knife and a pair of strong scissors could make a similar shutter in an evening at a very trifling cost, which would answer almost all purposes required of a shutter. The only expense incurred for this shutter was for the two spring hinges taken from tobacco-boxes, they costing fifty cents. A piece of hard wood, 4¾ inches long, 3¼ wide, and one-eighth thick, constituted the base, upon which were fastened at each edge strips 4¾ inches long, a quarter inch wide, and three-eighths thick, grooved below to allow the drop to run, and above to receive the doors; cross-pieces fitted to these strips, one at the bottom, half an inch wide, and another 2½ inches above the bottom of the same width, both grooved to receive the doors. On the bottom cross-piece was fastened a spring with a catch to hold the doors closed, which can be worked either with the finger or pneumatic drop. On the upper cross-bar were placed two pins to hold the rubber band used to accelerate the drop. The doors were 2½ x 1⅜ inches each, made entirely light-tight by a thin piece of pasteboard upon the edge of one, near the top, and on the inner side of each door was fastened a pin to hold the drop when in position. The doors were opened by the spring hinge before mentioned, when the catch was removed, and thus released the drop. The drop is a piece of zinc 4 inches long by 2¾ inches wide, rounded at the top, with a hook fastened near the top to receive the rubber band. A wooden pill-box with its bottom punched out was glued to the back to receive the lens.

The *President*: Mr. Canfield has a shutter invented by Mr. C. W. Stiff, which he will exhibit.

Mr. CANFIELD: This (showing it to the audience) is a sort of pattern which was kindly loaned me by Mr. Willard Fuller, and he states that it is intended for studio use simply. It is adjustable for time exposures. The adjustment is effected by turning the screw shown here, and it is released by the ordinary rubber button, one half of the shutter following the other very quickly. By turning the screw the time of releasing of the upper half of the shutter is increased, and I think you will see that it gives a time exposure. [Illustrating the method of operation.] It is claimed that this time can be accurately estimated in seconds. I find this is so to a certain extent, but hardly as much as claimed. Of course there is a speed intermediate between the two I have shown. [The shutter consisted essentially of two thin vulcanite slides, dropping one after the other in suitable guides affixed to the camera tube, the slides being manipulated by some peculiar mechanism, and their adjustment in distance apart being regulated by a special adjusting screw and index point.]

The *President:* The idea is to save taking the cap off, I suppose. (Laughter.)

Mr. CANFIELD: I will operate it once more, adjusting for a longer interval of time. [Performs the operation.] It is rather a delicate construction, so I will not pass it around. If any gentleman is interested in it I will allow him to examine it.

The *President:* I omitted to say in regard to the tripod that goes with this Blair camera that it has extra extension legs. It is a combination of an extension and a folding tripod. You can raise it as high as your head, so that you can take a picture as you actually look with your eyes. Mr. C. V. King, a member of our Society, has had a detective camera arranged with several improvements, one, I believe, is that a special mechanism, consisting of a slide operating on the spring increasing its tension, and permits of making a very rapid movement of the shutter, and another is the extension of the box itself, so that you can get a long or a short focus, permitting the focusing of objects only three feet from the camera. I think in the original camera there was no such extension of the box. The ordinary camera has only one spring, and could not be adjusted to different speeds. This box has the usual focusing attachment or "finder," as we call it. The button trigger is countersunk, so that when you press against the box accidentally nothing outside can strike it and suddenly set off the shutter. [The President illustrated the operation of the camera.]

The *President:* We will now undertake to show the merits of this rapid printing process. I have a sample chloride print here which was sent from London. [It was passed around.] I desire to make a few remarks in regard to this paper, and at the close I will have the pleasure of introducing to you Mr. Carbutt, of Philadelphia, who, with myself, will undertake a series of experiments with the paper.

Mr. Beach then read a paper on *The New Rapid Gelatino-Chloride Printing Paper.*[*]

MR. CARBUTT was then introduced by the President and said: Mr. President and Gentlemen—It affords me much pleasure to be present this evening at the kind invitation of your President, and take part in what is to me the most fascinating part of photography, whether it be negatives or positives. Not only am I to assist the President in the demonstration of the merits of the paper, but also in some of my own manufacture, as I believe I am the first to undertake it in this country. (Applause.) Making positive prints by the chloride-of-silver development is not new. It is now over nineteen years since the attempt was first made to make a positive by gelatino-chloride paper. Some of you were probably in swaddling clothes at that time, as some of the members appear comparatively young men now; but even to many of the old photographers this is taken up as something entirely new, and only those who have kept up with the history of photography know what has been done in the past. A gentleman, whose name I do not now remember—a man well known in London photographic circles—once made the assertion that it was not possible to develop a latent image on chloride-of-silver paper. From 1856 to 1859, before I moved to Chicago and while I was in Indiana, I remember I was then making experiments with chloride paper, and I was then following out the idea suggested by the gentleman in London who declared that it was impossible to develop a latent image on chloride-of-silver paper. I exposed and experimented until a faint trace of an image was seen, and I then finished the picture with gallic acid slightly acidified. There is not the slightest trace of an image visible after the exposure is made, so that the ultimate picture is entirely brought out by the use of silver in the development. So that to-night we can demonstrate to you that a latent image on chloride-of-silver paper is developable, and in order that we may have time, we will at once go at the practical part of it. Either daylight, gas-light, or the more actinic light of magnesium ribbon can be used, according as is most convenient. I am myself using magnesium light. Any questions that any of the gentlemen would like to ask, and it is in my power to answer them, I shall take pleasure in doing so.

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[*] Will be published in full in our next issue.

No questions being asked, the lights were lowered and the experiments begun.

Mr. Curbutt taking an inch and a half of magnesium ribbon, held it about one foot away from a printing frame in which was a negative and a sheet of his chloride paper, while the President had in his printing frame a sheet of Morgan & Kidd's chloride paper 4 inches away. With a spirit lamp the magnesium was lighted and the exposure made. Development then followed; Mr. Carbutt's print coming up rapid and turning to a reddish brown color, which was attributed to over-exposure. Mr. Beach's print proceeded slowly and was slightly under exposed, but by developing for 10 minutes the picture was well brought out.

In the meantime Mr. Carbutt had made several exposures and obtained some interesting effects. Without toning he produced clear black and white prints, which were much admired. He claimed that it was advisible, if possible, to do away with the toning and produce a print of the proper tint at once by development.

Mr. Beach then toned his print, using Morgan & Kidd's formula; the manipulation was conducted under a bright gas-light and was watched with interest by many members. After fixing in a hypo bath much stronger than was recommended, the print assumed a velvety black, and was much more brilliant than the usual gelatino bromide print.

Altogether the demonstration was quite successful and instructive; many members being impressed with the value and utility of the new process.

A noteworthy feature of the meeting was the display of the work sent in response to the invitation of the Executive Committee for the Presentation Print competition.

One hundred and forty-three prints were received from thirteen contributors, ranging from 8 x 10 to quarter size, and including beside silver prints, examples of the blue, platinotype and bronze gelatine processes.

The quality of the work as a whole was very good, and the display elicited many admiring comments from the members, and the embarrassment which the judges must have experienced in singling out one where so many were meritorious was felt by all.

The picture selected by the judges has for its title, "Winter on Orange Mountain." It is 5 x 8 in size, and is a view in the town of Montclair; showing in the middle distance, and at the east of the center, the tower and corner of a house; on the right are the grounds surrounding it, which merge into a grove of small trees coming out into the foreground and also extending back of the house, and giving a sloping horizon line which is balanced by the line of embankment between the road and the grounds.

Natural clouds (not printed in) are in the sky, the ground is covered with snow, and the trees are bare, and the lighting is such as to convey completely the feeling of winter cold and desolation. This, as well as two other 5 x 8 views, one in Orange and one in Passaic, was the work of Mr. Randall Spaulding.

Six 8 x 10 views and twenty-four quarter size views made with "detective" camera, by Mr. C. F. Smillie, formed the largest single contribution, and were universally admired. Of the large views, one was a hayfield with low hanging clouds, another a lake scene with a row-boat in the middle distance, another was a group of two little girls. A picture of "still-life,"—two ducks suspended from a nail—was remarkable for its rendition of the textures of plumage and background, and better worthy of being framed and hung than many "game pieces" in water-color or oils of that sort that are exhibited.

The small series represented almost every sort of subject; steamboats, street scenes, animals, several views taken from a train going at forty miles an hour, and one showing the dark interior of a gas factory or similar place; the white smoke pouring out of a furnace door being the only bright portion, but there were details even in the dark shadows. It was said to represent faithfully all that the eye was able to distinguish.

Landscape and architectural work seemed to predominate. A number of 5 x 8 views of cottages at Long Branch and other resorts along the Jersey coast, sent by Ralph McNeil, displayed great technical skill and were much admired.

Another series of twelve 5 x 8 views, sent by E. E. Sage, consisted of several well-chosen views of Summer landscapes and foliage, and an animated group on a river bank—presumably the Hudson—interested in the luck of one of their number, who is fishing.

Mr. Ludlow sent several views of steamers and vessels passing a pleasant point on the bank of the Hudson, which allowed them to be seen between borders of foliage; also a number of portraits taken out of doors, which were quite successful; also several interiors and animal pieces.

One or two winter scenes and an excellent, though small, shutter picture of breaking waves, showed the adaptability of the blue process for reproducing this class of effects.

Three or four interiors, two examples of cemetery monuments, and some studies of various subjects in platinotype were sent by Mr. Canfield.

A very artistic effect of a schooner anchored in the stream opposite the Highlands of the Hudson, and over against the dark background of the foliage, as well as four views of the *Alaska*, taken while she was recently in the dry dock (these latter being bromo-gelatine prints), naturally suggested by their subjects a maritime origin. They were sent by Mr. Beach.

A very charming cabinet size portrait of a child peeping out from a stack of Indian corn, which made an effective background, was the only contribution of Mr. Trippe.

An interesting view in some foreign city, and two animal studies mounted in an original fashion, giving the effect of an artist's pallette, were sent by "Carlisle" (Mr. Chamberlain).

A figure in Chinese dress, seated beside a table piled with bric-a-brac, and some detective-camera views of very picturesque character, were signed with a Chinese hieroglyphic (Mr. Robertson).

Dr. P. H. Mason sent a beach scene at Coney Island, a pretty view of a bridge, and a couple of views on the Hudson River.

Mr. Tieman's contribution was a forest view, and two or three scenes on a New Jersey river.

Mr. A. B. Benjamin sent a view of a bicyclist; also two landscapes, which attracted much admiration, one particularly being deemed by many equal to anything shown.

Although somewhat disappointing to the most sanguine of its projectors in the number of contributors and prints, still, considering the youth of the Society and the quality of the work, the result of the first competition is very encouraging, and the next similar occasion will doubtless bring out a still larger display.

At the close of the meeting the President extended the thanks of the Society to Mr. Carbutt for his interesting demonstration.

At a late hour the meeting adjourned.

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CAN any of our readers give us the address of Wm. Morgan Brown?

ASSOCIATION OF OPERATIVE PHOTOGRAPHERS.

392 BOWERY, March 18th, 1885.

President BUEHLER in the chair.

The reading of the minutes of the last meeting were dispensed with, owing to the illness and absence of Mr. Power, the Secretary.

After the reports of committees, &c., the regular annual election of officers was in order, when the following members were unanimously chosen to fill the several offices, as follows:

President.—Mr. Power.
Vice-President.—Mr. T. C. Roche.
Secretary.—Mr. Eddows.
Financial Sec.—Mr. Smith.
Treasurer.—Mr. Schaidner.
Trustees.—Messrs. Field, Mildenberger and Buehler.

A vote of thanks to the retiring officers, moved by Mr. Roche, was unanimously adopted, as was also a similar vote to the members who were about to assume office, for their willingness to serve the Association.

There being no further business before the meeting, it was announced that the usual festivities that mark the close of the fiscal year would, as heretofore, be observed; and a very enjoyable little programme having been arranged, and Mr. T. C. Roche appointed Master of Ceremonies, the remainder of the evening was given up to singing, dancing and social enjoyment.

At 10 P. M. an impromptu meeting was organized by Mr. Buehler, for the purpose of ascertaining the opinion of the several members on the subject of adopting certain amendments to the Constitution and By-laws, by which the object of the Association would, in future, embrace a mutual benefit project. Remarks on the subject were made by Messrs. Roche, Schaidner, Fields, Von Sothen and Cooper, and an apparently unanimous approval of the idea was evident.

This point being satisfactorily settled, festivities were resumed, and the gathering dispersed at what might, without exaggeration, be called an early hour.

(*Mr. Duchochois's Lectures continued.*)

COMBINATIONS OF CHLORINE WITH BROMINE AND IODINE.

BROMINE unites directly with chlorine, forming a yellow red volatile liquid, soluble in water, which it tinges yellow, and possessing a pungent smell. It is decomposed by bases in chloride, bromide and bromate. This compound, discovered by Balard, has not been analyzed.

IODINE MONOCHLORIDE, $I\,Cl = 162$. This combination of iodine with chlorine is a reddish yellow mobile liquid, very soluble in water and in alcohol. It discolors the indigo solution and does not turn blue starch paste. Ether deplaces it without alteration from its aqueous solution. Treated by ammonia, the iodine monochloride yields ammonium chloride and nitrogen iodide, which is an unstable compound, exploding spontaneously with great force: $3\,I\,Cl + N\,H_3 = 3\,H\,Cl + NI_3$.

Iodine monochloride is obtained by the direct action of chlorine on iodine, or, by distillation of a mixture of one part of iodine with four parts of potassium chlorate.

IODINE TRICHLORIDE, $I\,Cl_3 = 233$. The trichloride of iodine is solid and crystallizable. It is deliquescent and emits white fumes in the air. Being formed of a molecule of chlorine added to the monochloride, which is supposed to form no part of the atomic constitution, it is very unstable and easily decomposed by heat in chlorine and monochloride, and by alcohol and ether in hydrochloric acid, iodic acid and monochloride. With the alkalis and carbonates, the monochloride or trichloride form the compound represented in the following equation:

$$6\,K\,H\,O + 5\,Cl\,I = 5\,K\,Cl + K\,I\,O_3 + 3\,H_2O + I_4$$

Iodine trichloride is prepared by the action of an excess of chlorine on iodine.

IODINE AND BROMINE form two compounds corresponding to those of chlorine with iodine. They are soluble in water and discolor tincture of turnsol without reddening it. The monobromide is prepared by the action of bromine on iodine in excess, and the perbromide by bromine in excess.

All these compounds have been used in the daguerreotype process without giving, how ever, better results than those obtained by the simple preparation of the silver plate with iodine and bromine uncombined.

FLUORINE $Fi = 19$.

Fluorine is an element existing in fluor-spar. It has never been insolated, owing to its great affinity for hydrogen and the metals to which it combines instantly with more energy than even chlorine and bromine. Its affinity for silicium is remarkable. It decomposes all the silicates in deplacing the oxygen of silicia, $Si\,O_2$. This property serves to engrave on glass as it will be seen in the following lines:

HYDROFLUORIC ACID, $HF = 20$.

Hydrofluoric acid should be handled with great precaution. It is exceedingly corrosive—a drop on the skin produces a painful sore long to heal. Its vapors are deleterious and very dangerous to breathe. Ammonia at once combines with this acid, but it cannot be depended upon as an antidote, for the fluorides are as corrosive and poisonous as the acid.

Hydrofluoric acid has scarcely any action on the metalloids, except boron and silicium; with the latter element the action is represented thus:

$$4\,HF + O_2 = Si\,F_4 + 2\,H_2\,O\,S_i^{iv}.$$

hydrofl. acid.	silicium dioxide.	silicium fluoride.	water.

It is on the affinity of fluor for silicium that is based the engraving on glasses, which are compounds of various silicates. For this purpose the glass is coated with a thin layer of wax dissolved in four parts of turpentine, and a design drawn in removing the wax with a needle. On the application of the acid—which should be much diluted—the glass is etched more or less deeply, according to the strength of the solution and the time it is allowed to act.

Very fine results are also obtained by means of photography, either in developing a carbon print on a glass, or in coating the glass with bichromated albumen, exposing under a negative or a transparency *in lines*, inking slightly and dissolving the albumen not acted on by light. The glass thus prepared is then submitted to the fumes of hydrofluoric acid evolved from a mixture of fluor spar and sulphuric acid in a lead or gutta-percha tray. It must be observed that the design is opaque in etching with the fumes of the acid, and transparent when using the liquid, and, consequently that, in the latter case the photographs should be made on ground glasses.

Hydrofluoric acid attacks all the metals with the exception of lead, mercury, silver, gold and platinum.

THE FLUORIDES of the alkaline earths are insoluble; most of the others, including silver fluoride, are soluble in water. They are decomposed by sulphuric acid with liberation of hydrofluoric acid:

$$Ca''\,F_2 + H_2\,S\,O_4 = Ca\,S\,O_4 + 2\,H\,F.$$

calcium fluoride.	sulphuric acid.	calcium sulphate.	hydrofluoric acid.

Hydrofluoric acid is detected by its property of etching glass.

(*To be continued.*)

THE PHOTOGRAPHIC MERCHANTS' BOARD OF TRADE.

[*Report of the seventh meeting held at Metropolitan Hotel, N. Y., Feb. 10th, 1885.*]

THE meeting was called to order at 10 A. M. *President* H. Q. SARGENT in the chair. Meetings were also held at 3 o'clock P. M., on the 10th, and 10 o'clock on Wednesday, the 11th. The names of gentlemen present were given in our former notice.

The minutes of the last meeting were approved as presented. On motion of Mr. V. M. Wilcox, the regular order of business was suspended, and the following persons admitted to membership: Buchanan, Smedley & Bromley, of Philadelphia; Paul & Shape, Milwaukee; C. Slange, Chicago; Philip Beebe, Chicago; Eastman Dry Plate and Film Co.

The report of Arbitration Committee was then read, and placed on file. The report of the Board of Managers was submitted, accepted and placed on file. The changes in the Constitution recommended were adopted by a vote of a majority of the members present.

The Secretary was instructed to ask the Treasurer for his annual report, and when duly audited, to place it in the minutes of this meeting.

MR. GAYTON A. DOUGLASS then read the paper given in full below.

On motion of Mr. Allen, the thanks of the Association were tendered to Mr. Douglass, and the paper referred to a committee consisting of Messrs. Douglass, Tucker and Cady.

Mr. Cope then presented the following:

Minute in Memoriam.

HENRY T. ANTHONY.

When such a man as Henry T. Anthony rests from his labors, it is eminently proper that his associates, in any of the varied activities of his long and useful life, give expression on their records to their sense of loss through his removal.

Therefore, we, "The Photographic Merchants' Board of Trade," record our conviction that, in the passing away of our late member, Henry T. Anthony, we have lost one who was wise in council, diligent in labor, earnest in spirit, stern in integrity, in manner affable and winning, in disposition kind, charitable and benevolent. To a mind naturally strong, he added that vigor which comes through efficient early training, and the discipline of the schools was enriched and made productive through the later discipline of hard work in the various industries to which, from time to time, he gave himself. In that business which brought him within the scope of our Association, and to which so many years of his life was devoted, he attained an eminence which made his name and his virtues known and appreciated at home and abroad. And, to-day, throughout the photographic world, the name Henry T. Anthony, while suggesting a successful business career, is recognized everywhere as a synonym of truth, honor and integrity. The Association which is enriched by such a membership, is to be congratulated; and the surviving members owe it to their honored dead to see to it, that the Institution which bears upon its roll the name of Henry T. Anthony, maintains the high standard of integrity which that name suggests.

The Association ordered a copy of the above properly engrossed, signed by the President and Secretary, to be presented to the surviving partner and brother, Mr. Edward Anthony.

On motion of Mr. Angell, a committee of three, consisting of Mr. Douglass, the President and Secretary, was appointed to continue the work begun by Mr. Douglass, of gathering statistics of the trade, etc.

On motion of Mr. Cope, a committee of three was appointed by the President to consider the matters recommended in the Board of Managers regarding the appointment of one or more special committees. The President appointed Messrs. R. Angell, J. H. Smith, J. C. Somerville and W. Irving Adams as that committee.

It was moved and seconded that when the meeting adjourned, it be to meet at Buffalo, July 13th.

At the afternoon session the following officers and managers were elected for the ensuing year:

President, Hiram J. Thompson, Chicago, Ill.

First Vice-President, Benj. French, Boston, Mass. (of Benj. French & Co.)

Second Vice-President, David Tucker, Buffalo, N. Y. (of David Tucker & Co.)

Third Vice-President, R. B. Mullett, Kansas City, Mo. (of Mullett Bros.)

Treasurer, Jason C. Somerville, St. Louis, Mo.

Secretary, D. K. Cady, Cincinnati, Ohio (of P. Smith & Co.)

Managers, Orville C. Allen. Detroit, Mich. (of Allen Bros.)

Gayton A. Douglass, Chicago, Ill. (of Douglass, Thompson & Co.)

W. H. Robey, Boston, Mass. (of C. H. Codman & Co.)

W. D. H. Wilson, Philadelphia, Pa. (of Wilson, Hood & Co.)

E. O. Zimmerman, St. Paul, Minn. (of Zimmerman Bros.)

On motion of Mr. Cope, the Secretary was directed to copy the Constitution and By-laws as amended, and procure the signatures of all the members thereto.

Mr. DOUGLASS here addressed the Association, as follows:

"I am delegated by my colleagues, members of the Photographic Merchants' Board of Trade of America, to this, the pleasantest duty of my life. Allow me to use the words from an able address given some three years ago, in the City of Chicago, before the Association of Insurance Underwriters of the United States. Speaking of the value of associated effort, it said: 'It seemed to be a natural law for men to co-operate with each other. This was true not only in the moral, but in the literary, the physical and the scientific world. The hermit, be his life ever so pure, made no man better. The business efforts of the day were in the direction of association. Combined effort need not and ought not to work hardship to any one. The tendency of the times in this country was toward combined effort and more perfect union.' And, gentlemen, we stand to-day doing what we can to carry out this idea. As a potent factor in this labor, and adding to its symmetry and usefulness, is the faithful and painstaking work of its elected or appointed officers. And, gentlemen, I again say, that the present duty is a most pleasant one to me. Mr. Angell, you, I presume, had little thought when you accepted the portfolio of the Secretary of this Board of Trade, that aught would flow from such connection, other than the satisfaction resulting from duties well and faithfully done; but I am glad to say that in addition to the reward you have received from your own conscience, a slight recognition of your services is also to be bestowed in a more material form. Your ability and conscientious devotion to the difficult labors devolving upon an officer of an association like this, still in embryo, has been noted by your fellows, and to-day, at my hands, they express their appreciation and gratitude by requesting your acceptance of this gold watch and chain, which I now hand you. The worth of the testimonal is not to be measured by its purchase value. It carries from warm hearts the feelings of the brotherhood toward you, who have served them so well. In accepting this evidence of our esteem, take with it the best wishes of each and every one; and as it daily admonishes you of the swift flight of moments, hours, days and years, let it also daily remind you that life has something in it worth living for, in the good opinions and commendations of our fellowmen."

Mr. ANGELL, in response, addressed the Association as follows:

"MR. DOUGLASS AND GENTLEMEN:

"It is beyond my power to command my feelings sufficiently to make proper acknowledgment of your kind remembrance of me. If my services have been of worth to you, their value has come from my interest in the work, and not from thoughts of reward, except as rewards should come to us all alike in the growth and prosperity of our Association. I thank you, gentlemen, for your gift, and as I look into its face, from day to day, shall be happy in the thought that I see reflected there the faces of my fellow-members of the Photo-Merchants' Board of Trade."

The watch was engraved as follows: "Presented to Geo. R. Angell, by the Photographic Merchants' Board of Trade, February 10, 1885."

On Wednesday, February 11, the meeting was opened with W. P. Tucker in the chair. The Treasurer was directed to pay the traveling expenses of the Secretary when attending any meeting of the Association or Board of Managers, and that this include the retiring Secretary. The following were appointed on the Arbitration Committee: G. R. Angell, J. H. Smith, H. Q. Sargent. A vote of thanks was tendered the retiring committee, Messrs. Wilcox, Adams and Cope.

D. K. CADY, *Secretary.*

Mr. Gayton A. Douglass' Paper.

We regret that we could not sooner find room for the following able statistical paper. Mr. Douglass sent it to us handsomely bound in morocco, and not being willing to trust the original in the hands of the printer, lest it should be soiled, we copied it by permission from the *Photographic Times*, which had printed it in a previous issue.

TO THE MEMBERS OF THE PHOTOGRAPHIC MERCHANTS' BOARD OF TRADE:

Mr. President and Gentlemen:—Some months since I was deeply impressed with the fact that this Association had no permanent record of statistics regarding the business in which they were engaged, or which related to the service in any form, other than that which each individual or firm might have recorded or in mind. I at once assigned myself the task of collating such data as I felt might be of interest and of use as a nucleus for a permanent history of our trade and a result of association, not doubting in the least that it would by accretion grow in value as time progressed. The impulse of the moment and the self-imposed labor has drawn heavily upon my limited leisure, and not fully realizing until engaged in the work the magnitude of the task, I have to ask your indulgence for the incompleteness of the prepared exhibit. A territory so vast as ours, with its millions of population, throughout which are scattered so many of our guild, and alike those whom we look to for patronage, requires many months of laborious, painstaking, careful analysis to reach a just and accurate estimate. That which I place before you at this time, if thought of sufficient value, can be taken up by more able hands, continued, revised, and formulated before the next session of this Board of Trade, into a report worthy the attention and study of every member. It will show you in cold figures an industry that, from small beginnings, has grown to immense proportions. I may weary you with statistics, but they are an essential factor around which to build for the future of this Board of Trade a valuable history. To gain the information needed for the foundation, I sent to Washington for the United States Census Reports of 1880, which I carefully studied for figures relating to our special industry. As I progressed in the work, I saw that this official compilation was unreliable and unsatisfactory; but being the only general record, I have been forced to use it, hoping that from this introductory labor there may come, by persistent and painstaking collection, an array of facts that will be wholly reliable.

The population of the United States in 1880, according to the census, was fifty million one hundred and fifty-five thousand seven hundred and eighty-three (50,155,783). Has it occurred to you, gentlemen, that of this great number each one has, or will have had, within the limits of its life a picture taken by the camera, that wonderful agent through whose crystal lens we serve as bread-winners. I will first give you the figures as found in the census report, to be followed by my own, collected in the short interval of my working on this exhibit.

Volume II. of U. S. Census Reports has, under head of Manufacturers of Photographic Apparatus: Number of establishments, 10; capital employed, $90,800; average number of employees, 104; total amount paid in wages during the year, $41,314; value of materials, $40,458; value of products, $104,305, and located as follows:

		Capital Employed.	Avg. Employees.	Paid in Wages per Year.	Value of Material.	Value of Product.
California.............	1	$300 00	..	....	....	$1,000 00
Connecticut...........	1	40,000 00	56	$19,572 00	$26,128 00	50,000 00
Illinois...............	2	23,000 00	21	11,150 00	4,000 00	18,930 00
Massachusetts..........	2	5,500 00	6	,190 00	1,200 00	4,350 00
Missouri...............	1	15,000 00	6	2,000 00	6,000 00	15,000 00
New Jersey............	1	3,000 00	8	3,000 00	500 00	5,000 00
New York.......	2	4,000 00	7	3,402 00	2,630 00	10,025 00
Total...............	10	$90,800 00	104	$41,314 00	$40,458 00	$104,305 00

I have this branch of our special industry distributed as follows: Connecticut, 2; Illinois, 12; Indiana, 3; Maine, 1; Maryland, 1; Massachusetts, 4; Missouri, 2; New Jersey, 2; New York, 11; Ohio, 2; Pennsylvania, 2. Total, 42.

I cannot, of course, estimate the other items, such as capital, employees, etc., that may follow, as the work to be accomplished in the future.

Volume II. of U. S. Census Reports for 1880 has under head of Photographic Materials: Number of establishments, 5; capital employed, $63,000; average number employed, 63; total paid in wages, $25,310; value of materials, $89,000; value of products, $142,000.

		Capital Employed.	Avg. Employees.	Paid in Wages per Year.	Value of Material.	Value of Product.
Pennsylvania	3	$41,000 00	40	$13,510 00	$50,400 00	$81,000 00
Massachusetts	1	15,000 00	15	10,000 00	25,000 00	40,000 00
New Jersey	1	7,000 00	8	1,800 00	14,500 00	21,000 00
Total	5	$63,000 00	63	$25.310 00	$89,900 00	$142,00 000

I have collected the following list of those selling photographers' supplies, including manufacturers of dry plates, all of whom in a greater or less degree deal directly with the consumer: California, 7; Colorado, 2; Connecticut, 3; Georgia, 4; Illinois, 29; Indiana, 11; Iowa, 3; Kentucky, 2; Louisiana, 3; Maine, 1; Maryland, 5; Massachusetts, 7; Michigan, 6; Minnesota, 4; Missouri, 13; Nebraska, 2; New Jersey, 2; New York, 37; Ohio, 14; Oregon, 1; Pennsylvania, 18; Rhode Island, 1; Texas, 3; Utah, 1; Washington Territory, 1; Wisconsin, 5. Canada—Montreal, 3; Quebec, 1; Toronto, 4; London, 2; Manitoba, 2; Halifax, 1. Total in United States, 187; Canada and Halifax, 10. Twenty-two of this number are dry-plate manufacturers, but put in this list because they have to a considerable extent sought patronage from the consumer; 13 supply amateur photographers exclusively; 21 are drug houses carrying a line of photographic merchandise; 2 booksellers; 20 manufacturers; 2 refiners; 30 are doing business as photographers.

Of dry-plate manufacturers we have the following list: California, 3; Illinois, 6; Iowa, 4; Indiana, 1; Maine, 1; Massachusetts, 3; Michigan, 1; Missouri, 3; Minnesota, 2; Ohio, 2; Rhode Island, 1; New York, 9; Pennsylvania, 1. Total, 37.

During the past year two firms have failed, George J. Pfeil & Co., Pittsburgh, Pa., and H. A. Elderkin & Co., Louisville, Ky. A decided value, aside from a passing curiosity of figures, attaches to statistics relating to the consumers of the merchandise we manufacture or deal in, and from the same authorities I have quoted I give you the following tables, supplementing them with figures I have drawn from other sources at my command.

U. S. Census, 1880, Volume II.—Photographers: Number of establishments, 1,287; capital employed, $3,131,895; average number employed, 3,977; total amount paid in wages per year, $1,751,118; value of materials, $1,671,455; value of products, $5,935,311; being distributed as follows:

		Capital Employed.	Avg. Employees.	Paid Wages.	Value of Materials.	Value of Products.
Alabama	1	$1,500 00	1	$600 00	$1,200 00	$2,500 00
Arkansas	2	800 00	4	325 00	1,100 00	3,100 00
California	42	146,050 00	146	136.932 00	87,326 00	328,086 00
Connecticut	48	76,200 00	81	37,597 00	44,281 00	154,395 00
Dist. of Columbia	16	34,750 00	39	16,291 00	10,515 00	55,551 00
Georgia	2	2,000 00	4	1,900 00	4,000 00	8,500 00
Illinois	92	256,325 00	258	132,522 00	121,615 00	455,733 00
Indiana	43	47,200 00	62	23,160 00	24,309 00	94,785 00
Iowa	31	30,350 00	60	25,547 00	15,353 00	71,160 00
Kansas	11	8,350 00	13	4.585 00	4,800 00	17,050 00
Kentucky	15	32,800 00	47	23,456 00	31,000 00	84,485 00
Louisiana	12	39,100 00	45	27,390 00	19,399 00	79,765 00
Maine	18	37.800 00	48	16,500 00	16,600 00	60,250 00
Maryland	25	70,150 00	68	25,005 00	22,426 00	95,288 00
Massachusetts	126	310,450 00	524	189,319 00	179,529 00	575,952 00
Michigan	47	83,300 00	97	39,146 00	46,305 00	152,683 00
Minnesota	34	65,275 00	58	24,630 00	25,640 00	100,676 00
Mississippi	1	1,000 00	2	400 00	500 00	1,800 00
Missouri	40	100,750 00	106	55,538 00	62,100 00	219,694 00
Nebraska	4	20,000 00	20	7,900 00	25,200 00	60,200 00
New Hampshire	23	53,820 00	61	23,267 00	24,826 00	81,022 00
New Jersey	45	86,550 00	111	50,047 00	50,574 00	172,682 00
New York	290	930,875 00	1259	553,709 00	534,458 00	1,840,191 00
Ohio	101	147,500 00	227	92,407 00	92,371 00	332,081 00
Pennsylvania	106	384,200 00	423	175,127 00	138,577 00	541,964 00
Rhode Island	29	53,250 00	80	34,200 00	30,070 00	112,163 00
South Carolina	7	8,400 00	9	2,950 00	2,980 00	14,200 00
Tennessee	2	3,200 00	4	3,500 00	4,260 00	15,660 00
Texas	12	13,200 00	11	7,155 00	4,855 00	28,415 00
Utah	5	6,600 00	14	5,663 00	3,170 00	16,300 00
Vermont	9	9,700 00	12	6,375 00	6,175 00	21,025 00
Virginia	17	25,750 00	42	18,712 00	14,200 00	61,600 00
Wisconsin	29	42,200 00	38	17,243 00	19,441 00	67.715 00
Wyoming	1	2,000 00	2	1,020 00	2,000 00	6,000 00
Total	1287	$3,131,895 00	3977	$1,751,118 00	$1,671,455 00	$5,935,311 00

PHOTOGRAPHERS—CENSUS 1880, CLASSIFIED BY STATES AND TERRITORIES.

STATES.	Females	Males	Total Male and Female.	STATES.	Females.	Males.	Total Male and Female.
Alabama	3	81	84	New Jersey	6	259	265
Arkansas	2	85	87	New York	50	1,619	1,669
California	18	344	362	North Carolina	2	71	73
Colorado	6	113	119	Ohio	1	237	238
Connecticut	12	193	205	Oregon	6	52	58
Delaware	..	21	21	Pennsylvania	54	975	1,029
Florida	..	21	21	Rhode Island	12	94	106
Georgia	2	84	86	South Carolina	..	50	50
Illinois	34	744	778	Tennessee	3	103	106
Indiana	12	421	433	Texas	2	197	199
Iowa	24	420	444	Vermont	3	87	90
Kansas	14	231	245	Virginia	2	115	117
Kentucky	2	155	157	West Virginia	3	49	52
Louisiana	..	93	93	Wisconsin	30	320	350
Maine	6	132	138	TERRITORIES.			
Maryland	5	146	151	Arizona	..	11	11
Massachusetts	57	586	643	Dakota	..	26	26
Michigan	28	424	452	Idaho	..	7	7
Minnesota	8	116	124	Montana	1	11	12
Mississippi	1	55	56	New Mexico	..	16	16
Missouri	12	426	438	Utah	2	32	34
Nebraska	8	89	97	Washington	..	24	24
Nevada	..	22	22	Wyoming	..	6	6
New Hampshire	16	99	115	District of Columbia	4	77	81
Total					451	9,539	9.990

According to this official count we have in the whole United States 1,287 photographic studios and 9,900 photographers, an average of nearly 8 to each studio. I will take the census of 1880, and in each State and Territory note towns of a population of 500 and upwards, the figures which I give you in following table, adding also in another column an estimate of the studios which, in my judgment, the States and Territories named will have. We will then take a like average to each studio as that shown by the United States Census, and find the probable number of photographers that really exist, and to whom we look for support:

	Towns 500 and Over.	Estimated Number of Studios.		Towns 500 and Over.	Estimated Number of Studios.
Alabama	50	50	Montana	10	10
Arizona	3	5	Nebraska	56	64
Arkansas	40	46	Nevada	22	23
California	174	170	N. Hampshire	87	128
Colorado	50	58	New Jersey	199	260
Connecticut	53	255	New Mexico	7	7
Dakota	24	23	New York	567	985
Delaware	21	25	North Carolina	76	85
Dist. Columbia	2	8	Ohio	303	384
Florida	22	20	Oregon	34	35
Georgia	87	90	Pennsylvania	570	760
Michigan	243	293	Rhode Island	42	95
Mississippi	60	64	South Carolina	47	55
Minnesota	76	92	Tennessee	60	73
Missouri	207	293	Texas	119	140
Idaho	9	9	Utah	39	44
Indian Territory	1	1	Vermont	109	139
Illinois	473	635	Virginia	91	117
Indiana	217	269	Wyoming	5	6
Iowa	230	247	Manitoba	3	4
Kansas	121	126	Nova Scotia	77	80
Kentucky	97	111	Prince Edward's	3	3
Louisiana	56	65	N. Brunswick	61	67
Maine	146	206	Prov. Quebec	256	271
Maryland	84	105	Prov. Ontario	232	242
Massachusetts	335	673	Mexico	106	50
Washington	14	17	Cuba	14	10
West Virginia	51	60	Cen. America	47	30
Wisconsin	188	233			

Totals—States and Territories.......Towns, 5,577; Studios, 7,659.
" —Foreign Countries.......... " 799; " 757.

According to these figures, we have in the United States 5,577 towns of 500 population and over, and 7,659 studios as estimated. As the average, according to the census, would be too great, we will estimate 2 for each studio, giving us an aggregate of 15,318 photographers, which, I think, is not far out of the way. Tributary, and to a considerable extent a trade belonging to the members of the Board of Trade, is that shown in the supplementary table, which includes Canada, the Northwest Territory, Prince Edward's Island, New Brunswick, Mexico, Central America, and Cuba. We have 799 towns with an estimated number of studios as 757; photographers, 1,154.

I will give you some figures that are absolutely correct, and when compared with the previous table, will show you that our estimate is a very close one These figures are the result of a late revision of States and Territories, yet incomplete; and by the same method a record can be provided for the use of the members of this Board of Trade and for permanent, truthful statistics.

	Towns.	Studios.
Illinois	237	495
Iowa	225	355
Indiana	142	114
Wisconsin	116	197
Kansas	95	146
Michigan	161	272
New York	261	262
Colorado	31	49
Nebraska	53	68
Minnesota	73	110
Missouri	127	184
Ohio	231	407
Pennsylvania	268	172
Miscellaneous	238	240

Total Towns........ 2,358.
" Studios........ 3,071.

In this table we exhibit 13 States, our census still incomplete, and we have a record of 2,831 studios. There are 47 States and Territories, including the District of Columbia.

Let us leave the dry and wearisome path of statistics and turn to other topics.

THE PHOTOGRAPHIC MERCHANTS' BOARD OF TRADE—ITS USE.

It will, I presume, strike you as singular that such a question should be asked, or what should prompt it, and possibly to no one but myself has it been presented; but, as propounded, it comes before us to be answered. Some there are when approached to interest themselves in any work, even should it be such as might plainly offer a profit, pecuniary or otherwise, will scan with critical eye all the belongings, and ask its use. It is easy, when squarely looked at, to see why the question in relation to an organization like this should come, for its benefits are not plainly floating on the surface, and easily caught in the swift flight of the busy merchant. To those who have given a little thought and study to the benefits flowing from associated efforts, and who are not held down by the grinding slavery of a penny policy, the uses of such an organization as this comes with such clearness that to question its value seems a waste of words and time. Some are clearly inconsistent when they withdraw their fellowship, for they are on record as having urged some concert of action, where prices would be considered and protection might come to those who would engage in the work. The scheme being projected on the narrow-gauge plan, met with little encouragement. Such an association as this is rich in results, even should it stop at the threshold of the amenities of trade, and have its annual meetings simply to renew the warm greeting and speak kind words to our fellow-merchants. But this is not all. That grand bond of union that holds heart to heart, softening the asperities of trade with pleasant word and look, inviting a manly habit of competition, having always in mind to live and let live, while the golden rule springs up with added force to urge every one to heed its teachings. Aside from the moral advantage of these councils, enacting rules of business conduct, which it is hoped will guide to better results, it brings from ripe experience sound principles that, wisely followed, give just returns for labor and capital. It would be idle to dissect in detail each particular feature of this association, offering good to those who will become members.

The Photographic Merchants' Board of Trade was instituted for a purpose, and that purpose up to the present time has, in the main, been fulfilled, and, judging from the past, the future offers so much of value as an outgrowth of its life that no faint heart is found among those who have understood its design, but stronger than ever grows the desire to push forward the good work begun. A great many rest content in the idea that all is accomplished when an association is safely launched. They will watch with intense interest and shout the loudest as it moves gracefully from the ways, and they immediately go about their business with a feeling that they have done their share, and at once look toward the place where they left the craft quietly resting, waiting with anxious fervor for their benefits. They wonder why they are no richer for having been there; why they have the same or added competition; why a neighbor is cutting prices now that an association lives, and they members. Where are the results? Associated effort means just what the two words say: *work together* and *work*. An association like ours will not grow of its own volition. The same spirit that brought it into being must keep its wheels turning.

OUR LITERATURE.

The literature pertaining to any industry, art, science, or profession is a factor that wields a great influence, and such an educational force should be fostered and encouraged. Relating to photography, we find that the greater the circulation of our journals, with its resulting influence in making the photographer more intelligent, the higher the character of the profession, and of better grade the source of the supplies necessary for the prosecution of his business. Raising the standard increases trade; hence an educated photographer is more to be desired than one who simply learns the mechanics of the art-science, and serves the public as a machine. We have a certain duty as merchants connected with this literature that may not appear at first glance of sufficient importance to recognize. In scrutinizing the expenses of business we naturally look at the item of advertising in the journals or such text books as from time to time make their appearance. We do not notice an immediate return for this outlay, hence reason that it is money wasted. Even should the return after many days seem meagre, or wholly imperceptible, yet we owe something to our calling, and in no better way can we pay the debt than by supporting good journals and laboring to get subscribers, that the light of knowledge may be spread out among the fraternity, and we as merchants be benefited, not only in the pleasant thoughts of a duty well done, but in meeting a more liberal patronage. We have at the present time the following list of journals asking your friendship and support: *The Photographic Times*, published in New York; a weekly and monthly edition; Scovill Mfg. Co. ANTHONY'S BULLETIN, New York; a semi-monthly; E. & H. T. Anthony & Co. *Philadelphia Photographer*, Philadelphia; monthly; E. L. Wilson. *St. Louis Practical Photographer*, St. Louis, Mo.; monthly; Mrs. J. H. Fitzgibbon. *The Eye*, Chicago; weekly; C. Gentilé. *Walzl's Monthly*, Baltimore, Md.; monthly; R. Walzl. *The Practical Photographer*, Chicago; quarterly; Garrison Bros. *American Photographer*, Philadelphia; monthly; T. H. McCollin. *Picture and Art Trade*, Chicago; monthly; J. S. Ford.

Here we have 2 weeklies, 1 semi-monthly, 6 monthlies, and a quarterly wholly devoted to this special work of disseminating knowledge to the fraternity of photographers. Our guild has not as yet felt the necessity of a journal devoted exclusively to its interests, although I think a quarterly journal might be published of sufficient value to warrant our support. It might come directly from the Association as part of its yearly benefits and work. I have made no mention of contemporaneous literature, which, to a greater or less degree, especially those pertaining to the sciences and arts, are permeated with photographic information. I will cite only one, that of the *Scientific American*. Last year that influential journal had 514 separate articles relating to the art-science of photography.

OUR RELATION TO THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

That a bond of union exists between this Board of Trade and the organization just named, must be evident to each one of you. Associations and associated effort has for its sequence the community of interests conserved by judicious legislation, and it becomes us, as one of the factors, to bring the subject under discussion and formulate some method advantageous to both. The good results to the art-science of photography and its devotees flowing from these annual conventions, I assume, will not be questioned. Our office is to provide the most economical and effective means which wise counsel may at this time or at future assemblies devise. A hasty review of the methods employed in the past may aid us in weighing such propositions as will be offered. It has been a friendly business rivalry for some houses, those particularly who were in the immediate vicinity of the place of convention, to make an elaborate exhibit, which you well know is attended by a large expense, which outlay it is hoped to cover by increased sales and a *quid pro quo* in advertising. It would seem that this Board of Trade should not enter the domain of private business enterprise and judge the decision of any member; but let us look at it in the light of a possibly better method, and with pecuniary results equally valuable. It is not our object to force upon those who should bear the burden an unwilling duty, but rather to place the load where it in equity belongs. Each manufacturer, and those who may control the sale of any article used in photography, should exhibit their products, and the dealer or merchant have free access to such display for their patrons. I would not in any manner curtail the sale by exhibitors if they did not enter into competition with the general merchant by concessions of discounts to the injury of the trade that are steady buyers the year.

A thoughtful consideration of the subject will, I trust, lead to some well-laid plan for a splendid display at the coming Convention of the Photographers' Association of America, to be held in the City of Buffalo, N. Y., commencing July 14th of this year. I would suggest further that the members of this Board of Trade, as business houses, be assigned uniform floor space for headquarters, each one to provide appropriate signs and such conveniences of table and desk room as they see fit. This, of course, will not interfere with any further display that any member may choose to make. Further, I would also include a generous office space for the Photographic Merchants' Board of Trade, not in an offensive sense, but to show the fraternity and this sister organization that we are hand-in-hand with them for the mutual good of all who mark progress on their banner. I know objections have been raised to the so-called interference of photographic merchants in the working of the Association of Practical Photographers; but this cry comes from those who have thoughtlessly concluded that our approach was an enemy in disguise, and our object simply to prey upon their substance. Concert of action on our part will, or should, disarm them of this false impression, and show us in our true light of friends and helpers in this grand work of progressive education. I cannot see or understand why our action should be misconstrued. I am sure that every member of this Association has an interest in their patrons reaching beyond the "mighty dollar."

It may be found occasionally that a merchant has no other aim than merely to serve the craft for the one purpose of profit, adding to it the mistaken fancy that the more ignorant the patron, the larger the patronage and greater the gain. I hold this to be wrong. A few years ago I was asked by a merchant in our line, and at a time when I was active in pushing all educational work relating to our art-science, why I took such an interest in educating photographers. He said: "They don't buy any more goods; they are no great factor of profit to us; and," said he, "you are, in a few words, 'wasting your sweetness on the desert air.'" I had, of course, but one reply: that, aside from the ethics that education brought, I was satisfied that every educated photographer was worth in trade more than one that was a mere machine; and that the progressive man stimulated business interests, having better apparatus, increasing his income by intelligent activity—all of which resulted in benefits to us. My argument evidently made little impression. Thinking the matter over later, I was led to believe that possibly the real animus of this war against improvement lay in the fact that, given an educated photographer, you must have an educated merchant to serve him, and as that admits of no leisure, but, on the contrary, a similar painstaking course of study as one pursued by the patron, he was loth to be disturbed in his comfort. He did not care to know what a swing-back on a camera-box was for further than being an attachment which brought a trifle more money to the sale; or, when a prospective customer stated his wants for a lens that would in a certain distance do certain work, just what lens to hand out from his case, followed by a multitude of similar questions requiring technical knowledge on the part of the merchant to answer. To keep up with the procession involved some work, and this merchant, hugging conservatism with a firm grasp, was not ready for it.

I think, however, that the time is now past when such objections can be noted. All seem earnest in the good work, and feel that a photographer, if he honors himself, is pursuing a calling the peer of any in the world of industries. I wonder how many of this Board of Trade realize the extent or value of the art-science of photography as it relates to the world's habits and industries? It brings to the humblest hamlet joy at smallest cost in the preservation of the likeness of the loved ones. It reaches the walls of greatest splendor in royal palaces, and places there indelibly the faces of its household. The remotest parts of the globe are brought to our firesides with its magic fingers, and all arts and sciences are using its subtle power for exemplification and aid. It is, in fact, becoming an adjunct of our daily life, both as a means of culture and a desirable factor of our amusements and leisure. At home and abroad in the near future the camera will be our companion.

You will readily see at a glance the importance of this association which binds together the merchant's world that supplies this great industry. The fifty years since the discovery of writing by light has marked wonders that never entered the wildest fancies of the fathers that gave it to the world. The fantasy of Tiphaine de la Roche in the eighteenth century became a reality in the succeeding one through the busy minds of Daguerre and his contemporaries. So to-day we stand guiding millions of dollars of capital, directing thousands of busy hands in the work of producing and supplying the requisites for the prosecution of the heliographic art.

A few words more and I have done. A large and valuable clientage has not been mentioned in presenting this paper. I refer to the amateur photographer, an element that is increasing with wonderful rapidity, and whom we are called to serve in the same general way we do the profession. I leave its special consideration for another paper to be presented, with your kind permission, in the near future.

GAYTON A. DOUGLASS.

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[*From "Photographisches Wochenblatt."*]

ABOUT CARBON PRINTING.

BY F. STOLZE.

(*Continued.*)

VI.—*The Development* of a carbon picture, treated in that manner, is just as simple as it is interesting. The plate with the picture is placed into a dish with cold water, and left therein for a few minutes. Then the cold water is poured off and replaced by water of 35° to 50° C.

It is best to begin with a low temperature, and then increase the same only when the desired effect is not obtained. The dish is rocked to and fro, and soon the pigment image can be seen to loosen around the edges until the whole paper floats off. The rocking is continued until all soluble parts have been removed from the coating and the picture is clearly visible. It is not advisable to apply a brush; under proper treatment the process will take place in a uniform and sure manner without this. If the picture appears over-exposed, and the white parts somewhat covered, it can be weakened considerably by a gradual increase of temperature, but care has to be taken not to proceed too quickly, as it can easily be overdone. As soon as the picture is completely developed, it is rinsed in clear, lukewarm water, plunged for a few minutes into cold water; placed after this, for at least five minutes, with constant rocking, into a saturated solution of chrome alum, rinsed once more in cold water and then left to dry.

VII. Intensifying. — Pigment diapositives can be intensified with more facility and surer than any other style of picture. The most convenient for this is a solution of 1 : 100 to 1 : 1000 of permanganate of potassium, in which the picture is placed from 2 to 3 minutes. The proportionally small effect of this intensification should not tend to deceive; the yellow color of the same is very opaque for chemically effective light. Care has also to be taken in regard to the concentration of the solution, as it is in no way indifferent, whether a picture is placed for a short time in a strong, or for a long time in a weak, solution. In the first case the tender half tones are intensified too much and a correct picture cannot be obtained. If diapositives are desired of more agreeable tint, several means can be employed; for instance, the plate can be plunged into a nitrate of silver solution 1 : 190; it is left in the same for 3 to 4 minutes, dried with blotting paper, and then exposed to daylight. The tone so obtained is very handsome and warm, and the manipulation can be repeated *ad libitum.* The tone changes if the plate is treated with a pyrogallic solution, a tannin or gallic acid solution, after the silver bath. If handsome blue-black tones are desired, the plate is first plunged into a weak pyrogallic acid solution, dried superficially, and then treated with a chloride of iron solution. This intensification can also be repeated *ad libitum.* Altogether, with the aid of a double combination of salts, all possible insoluble salts can be produced in the gelatine films, and in that way diapositives be produced of all possible tones. Pigment pictures especially offer a wonderful variety in this respect.

VIII. The Completing of the Pictures by varnishing is generally not necessary. But when desired, the plate should be thoroughly dry before the negative varnish is poured over the same. The most suitable varnish is made of a diluted varnish of unbleached shellac with a light addition of some flexible gum. Common negative varnish is too thick for this purpose.

Finally, attention is drawn to one peculiarity. Silver pictures become stronger in proportion to the concentration of the sensitizing baths; pigment pictures show just the reverse. The reason for this is easily recognized. The chrome salt is of a color which excludes the chemically effective rays thoroughly. The more concentrated the solution, so much less will the rays penetrate into the film, and so much thinner the picture will be. Theoretically, therefore, the most brilliant diapositives could be obtained from the thinnest negatives if the sensitiveness did not decrease correspondingly under a too much diluted sensitizing bath. Although valuable effects can be obtained by changing the strength of the bath, they are limited on both sides to a certain extent, as the baths should not be taken too strong, to prevent crystallization of the salts. Whatever cannot be obtained in this way will have to be reached by intensification.

Translated by H. D.

Bibliography.

We have to thank E. C. E. Bergmann, J. F. Holley, A. S. Hinckley. and A. N. Stauffer & Co. for copies of the Bulletin for June, 1875. These gentlemen will please accept our most sincere thanks for their kindness.

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OUR ILLUSTRATION.

The picture we present to our subscribers on the first page of this issue, although excellent in every artistic point of view, may not at first sight strike the photographer as at all important to him, not being directly in his line, save in the matter of lighting, position, etc. Its value to the photographic world will, however, be readily admitted when it is known that this is the first sample ever published of photo-engraving from a dry plate negative.

The difficulty which has always presented itself and seemed insurmountable was a lack of clearness in the lines and intensity in the high lights, so much so, that among photo-engravers who were alive to the value of dry plates for use in their business, it was reluctantly declared as impossible to succeed with the gelatino-bromide film.

Now, we take pleasure in presenting a sample of work that ranks second to none, and which with great satisfaction we announce it as a result from a negative made on Anthony's transparency plate.

What Our Friends Would Like to Know.

Q.—A. L. writes: In your January issue, page 24, the article of William McComb mentions chrome solution, in which chrome alum is given. I wish to know what chrome alum is and how it is made? No druggist here keeps it, neither do they know what it is. Your answer will oblige.

A.—Chrome alum is a dark green crystalline substance, with the same form as common alum. When kept some time it loses water of crystallization and becomes covered with a dirty purple powder. It is made by dissolving sesquioxide of chromium in sulphuric acid, then adding sulphate of potash and allowing the solution to crystallize. The crystals are octohedral and contain 24 molecules of water of crystallization. It is analogous to ordinary alum, chromium oxide being used instead of aluminum oxide (alumina) in its preparation. It is usually found as a by-product in using the ordinary medical battery with the acid bichromate of potash as an exciting fluid. The dark green crystals adhering to the plates of the battery consist of crystals of this salt.

Q.—C. M. W. writes: Will you kindly inform an amateur, who is an interested reader of your magazine, what the exact lawful weight of a fluid ounce is? Also, where formulæ are given to be mixed so many "parts" of one substance with so many "parts" of another, is it always meant that "parts" are taken by weight?

A.—The fluid ounce, as given in the United States Pharmacopia, weighs 455.61 grains, which is the lawful fluid ounce in this country. In England, on the other hand, the lawful fluid ounce weighs 437.5 grains. The term "parts" in any formula means parts by weight, unless the writer is unusually careless in his method of mixing.

Q.—Photo. View Artist wants to know if there is a tube that has an extra lens or prism that will bring a ferrotype (positive) back to its natural position as a photograph.

A.—A ferrotype may be reversed in two ways; one is by using a right-angle prism of glass in front of the objective; the other is by means of a silvered mirror. In regard to the silvered mirror, it must be silvered and polished on the surface, and not like an ordinary looking-glass, with the silver on the back. The right-angled prism can be obtained from our publishers.

Q.—FRIEND BULLETIN: I use Cooper's developer (latest formula); fix; leave my plates one or two hours in water, changing four or five times; intensify with mercury and ammonia; have a yellow negative. What is the cause; and how shall I get rid of the yellow?
F.

A.—The cause of the yellow color is imperfect washing out of the pyro. Place the plates in a strong solution of alum, made acid with citric acid; leave them fifteen to thirty minutes, then wash well.

Views Caught with the Drop Shutter.

OSWEGO, N. Y.—Mr. and Mrs. Will. Nesbeth are about to open a fine new studio on the west side. Both are well known, and we wish them well.

FULTON, N. Y.—H. C. Beales is hard at work on his new gallery, which will be completed in a few weeks. He will have one of the best studios in this part of the country.

PORTRAITS of two hundred members of the Troy Citizens' Corps, in a combination picture 6 x 10 feet, taken by Mr. James Lloyd, of Troy, N. Y., have just been completed in a view representing the State Camp Ground at Peekskill, N. Y. Each member was photographed separately, cut out and remounted. It is so well done that one can hardly detect where they are joined. Mr. Lloyd deserves great credit for this piece of work, as great skill must be displayed to get each member posed correctly and in the proper place. It has taken one year to complete the picture, and the work is a credit both to the Corps and Mr. Lloyd.

J. N. MCDONNALD, of Albany, has disposed of his interest in the photograph business of McDonnald & Sterry, and will give his entire attention to the photographic stock business, at 520 Broadway, Albany, N. Y. Mr. McDonnald has had twelve years' experience.

A FIRE from some unknown cause in the photograph gallery of Palmeri & Vaughn, No. 491 Fulton street, Brooklyn, caused a loss of $2,000 to the stock.

THE ECLIPSE.—Prof. Todd, of Amherst College, secured a complete record of the late eclipse of the sun. With the co-operation of Mr. Lovell fifty photographs were taken.

EIGHTEEN or twenty years ago Judge Endicott, the new Secretary of War, was a proud expert in amateur photography.—*New York Times.*

ALMAN, the photographer, has made for the Nicaraguan Government a life-size oil portrait of Gen. Joaquin Zavala, the President-elect.

INSECT LIGHT.—The light emitted by insects, when examined under the spectroscope, is very beautiful, but is without bright or dark bands. When the intensity diminishes, the red and orange rays disappear and the spectrum is reduced to yellow and green rays.

Found in the Editor's Box.

A WASHINGTON photographer is getting a portrait of an Indiana man in the act of not getting an office. The negative will be preserved.—*Louisville (Ky.) Courier-Journal.*

THE Lowell *Citizen* proclaims that "the Chinese language has several thousand letters, but T is the one most used." Somehow we always thought the most used was Q. It seems to be more worn.—*Yonkers Statesman.*

BETSEY, an old colored cook, was mooning around the kitchen one day, when her mistress asked her if she was ill. "No, ma'am, not 'zactly," said Betsey; "but de fact is, I don't feel ambition 'nough to git outer my own way."—*Harper's Bazar.*

One day last week, when the engines were flying down Washington Street in response to an alarm of fire, a man who was running was stopped by an eager citizen in quest of information, who asked hurriedly of him: "What's a-fire?" To which the other angrily replied: "What's a fire? Why something in a state of combustion, you fool! Look at your dictionary!"—*Boston Saturday Evening Gazette.*

The Beauty of the Telephone.—Brown (who has just had telephonic connection established between his office and house, is very much pleased with it)—I tell you, Smith, this telephone business is a wonderful thing. I want you to dine with me this evening, and I will notify Mrs. Brown to expect you. (Speaking through the telephone)—My friend Smith will dine with us this evening. Now listen and hear how distinctly her reply will come back.

Mrs. Brown's reply (coming back with startling distinctness)—Ask your friend Smith if he thinks we keep a hotel.

Two little boys witnessed a balloon ascension for the first time. "Oh, look! look there!" exclaimed the younger. "What is that?" "It's a b'loon," replied the elder. "What make it go up so fast?" "Gas." "What is gas?" "Why gas is—is—is melted wind." The Illinois Legislature should keep this definition in mind.—*Newman* (*Ill.*) *Independent.*

An irreverent citizen passed through the Barye Square the other day, and gazing at the great squatting lion, with head upturned toward the statue of Washington on top of the monument, remarked, gravely, "Well, they've got George treed for good now!"—*Baltimore American.*

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NEGATIVE BY
MR. HENRY BEADEL

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HELIOCHROMY.

Since our first effort to call attention to photography in colors we have received many encouraging letters relating to this most fascinating subject. Many workers are still thinking about the matter, and a few are making experiments. One enthusiastic correspondent, while writing for some information of a chemical character, assures us that he can produce the picture in colors by photography, and can fix these colors "immortally." We most heartily wish him success and wish there were more workers in this field of photographic art. We have received a number of interesting letters from correspondents in Europe who have promised to discuss the subject from various points of view. In this issue we are pleased to give a contribution from Mr. A. A. Campbell Swinton of England. His paper is a most able review of work done on this subject, and should be carefully read by all interested in photography in colors. Some of the points have been touched upon in previous papers in the Bulletin; but the greater detail given by Mr. Swinton and his very thorough discussion of the scientfic reasons for some of the difficulties hitherto encountered, deserve very careful attention.

One expression used in the paper appears to us to call for a few words. We refer to the use of the term silver "subchloride." There are no chemical reasons for the existence of such a substance. From our knowledge of the action of both chlorine and silver in a multitude of other cases, we believe that only one silver chloride exists. That light produces some change upon this chloride which allows of its decomposition under the influence of reducing agents such as pyrogallic acid and sulphate of iron, everybody must admit; but that light reduces silver chloride to subchloride we have no evidence. The change effected by the light is probably a molecular one, a change in the physical condition of the chloride of a similar character to that produced upon the bromide under the influence of heat. Such a molecular change has been noted by the eminent chemists Roscoe and Bunsen in the case of mixtures of hydrogen and chlorine, and there are many others to be found in chemical science. We do not wish to find fault with Mr. Swinton, but simply to call attention to the use of an expression that we constantly see in print and which appears to us a misnomer.

In regard to the colors on the plates

used by Becquerel and Niepce de St. Victor, we venture a suggestion. When metallic plates are submitted to the action of various chemical regents, more especially under the influence of the galvanic current, certain active forms of some elements are known to be produced. In the case of the decomposition of water by electrolysis, the plate at which oxygen is evolved also produces ozone. Now, may not some such action take place upon the plates that are acted upon in Becquerel's experiments? Some active condition of chlorine may produce a condition of the silver surface that facilitates the production of the colors obtained. The effect appears a consequence of physical rather than chemical action, and some other electrolytically active element may effect the change more readily.

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PAST, PRESENT AND FUTURE OF PHOTOGRAPHY IN NATURAL COLORS.

BY A. A. CAMPBELL SWINTON.

Newcastle-on-Tyne, England.

The subject that I have chosen for this paper is undoubtedly one of general interest. The solution of the great problem of photography in natural colors will, when it comes, affect not only the members of the photographic profession and their amateur brethren, but also the public at large.

When in the year 1839 Fox Talbot and Daguerre simultaneously succeeded in fixing—the one on prepared paper, the other on a silver plate—the image of the camera-obscura, they rendered photography a fact, and their discoveries gave rise to great expectations. By far the greater number of these expectations have now been realized, even beyond the hopes of the inventors who fulfilled them; but some few have not, and among the latter stands pre-eminently foremost the possibility of obtaining photographs in natural colors.

Who is there who has viewed the gorgeous tints with which nature paints the world, reflected in all their pristine glory on the screen of a camera-obscura, and has not longed for the means to fix them as they are? Many, no doubt, have wished for such a possibility; some few have attacked the problem, but no one as yet has completely solved it. The ordinary photographic plate is not sensitive to color—that is to say, on its color simply, as with more or less intensity according to its actinic value; and thus, as yet, photography can only paint nature in monochrome.

In order rightly to understand the difficulties of the problem, or in order to properly estimate the value of what has so far been discovered, it is extremely necessary to have a clear conception of the physical nature of light and color.

According to the now universally accepted undulatory theory, the sensation that we call light is merely a form of vibration, as is sound. All space is believed by scientists to be pervaded by exceedingly attenuated and elastic matter, to which the distinctive name of ether has been given. Now, light is understood to be a form of vibration or wave-motion of this ether, in exactly the same manner as sound is known to be due to the vibration of the atmospheric air.

Again, difference of color is due to what is called difference of wave length, or difference in the rapidity of the ether vibrations. This, when we follow the analogy of sound, corresponds with difference of tone or pitch, exactly as a high note in music is due to extreme rapidity in the atmospheric vibrations, and a low note to less rapid vibration.

So with light; a violet color is the result of extremely rapid ether vibrations, and a red color the result of less.

In violet-colored light there are no less than 59,750 ether vibrations per second, in comparison with 37,640 for red-colored light. These are the extreme cases, and between them come in order after violet, indigo, blue, green, yellow, orange, until the red is reached. There are thus seven primary colors, and from combinations of these all other tints can be obtained.

Next let us consider why objects appear to the eye to be of different colors. The explanation of this is very simple. White light is not really homogeneous, as it seems, but is composed of seven different colored lights, and a piece of white paper appears white simply because it reflects all these colors. Colored objects, on the other hand, are only capable of reflecting certain colors, while they absorb the others. Thus a red surface absorbs lights of all colors except red, which it reflects; a blue object absorbs all but the blue, and so on. A perfectly black surface, if such were obtainable, would absorb all the rays, and reflect absolutely nothing at all.

Now, what is wanted for the solution of the problem of photography in natural colors is clearly some substance which, when submitted to the action of light of any definite color for a certain length of time, will acquire the property of thereafter absorbing from white light all other colors, and reflecting only that one color to which it was exposed in the first instance. In other words, the substance, after having been exposed to light of a certain definite wave-length, must afterward be capable of reflecting light of that same wave-length only. Looked at from this point of view, the problem does not seem to offer insuperable difficulties, and, as we shall see later on, it is of comparatively easy attainment. There is, however, another and equally important point to be examined. If a plate of such a substance as has been above described be exposed to a variety of colored lights —as, for instance, to the image of a landscape thrown upon it by a photographic lens—the image will become impressed upon the surface of the plate, and a photograph in colors will be obtained. To some, perhaps, the problem will appear solved; but this is not the case, for, to use a technical expression, the image is not yet fixed, and it is this question of fixing the colors after having obtained them that presents by far the greatest obstacle to the attainment of colored photography.

As long as the colored plate be preserved in absolute darkness, the image will remain intact, but the substance of which it is composed is still sensitive, and if exposed to light of any color it will soon become of that color itself, while if exposed to white light it will turn white.

To secure permanency of the colored image, this further action of light must evidently be prevented; but how to do this without destroying the image is a problem as yet unsolved.

From the above it may be gathered that what is required for the solution of the problem of colored photography may be divided under two heads:

Firstly.—We require a plate so sensitive to color that, after it has been exposed for a few seconds in a camera, it shall show a colored *fac simile* of the image thrown upon it by the lens.

Secondly.—A means of fixing the colors so that after the plate has been once impressed, it shall no longer be sensitive to light of any description.

Let us see what has been done toward the fulfilment of these necessary conditions, and what yet remains to be accomplished.

The first discovery of a substance sensitive to color dates a long way back. As early as 1810 Professor Seebeck, of Jena, discovered that chloride of silver, when exposed to the colored spectrum produced by passing the sun's rays through a glass prism, became colored in a corresponding manner, the red and blue being especially distinct.

In 1839 Sir John Herschel exposed to the solar spectrum paper covered with violet subchloride of silver obtained by floating the paper on solution of sodium chloride and silver nitrate, and subsequent exposure to light, and obtained a colored spectral photograph.

In "Hunt's Researches on Light" we read that iodized paper brushed over with solutions of potassium ferrocyanide and nitrate of silver will reproduce the colors of the spectrum with a certain amount of truth.

For the first substantial advance on the discovery of Professor Seebeck we must turn to the protracted and arduous investigations of M. Edmond Becquerel, the whole of whose remarkable discoveries are detailed in their author's great work on light.

Becquerel worked with pure silver plates, which he chlorinated by immersion in various liquids. His first experiments were with chlorine water, in which he dipped his silver plate until its surface became covered with a gray film of silver chloride. On exposing the plate so prepared to the solar spectrum, he obtained an image of the latter which, for brilliancy of color and fidelity to the original, far surpassed the results obtained by any previous investigator. Pursuing his experiments, he discovered that the thickness of the layer of silver chloride had a very considerable influence on the rapidity and vigor with which the colors came out, and he consequently gave up the method of chlorinating with chlorine water, and substituted the following electrolytic plan:

A plate of pure silver carefully polished with rouge and alcohol was attached to the positive electrode of a galvanic battery, and suspended in a solution composed of one volume of pure hydrochloric acid to eight volumes of water. On plunging into the liquid a rod of platinum or copper connected with the negative electrode of the battery, the electric current decomposed the acidulated water, and minute bubbles of chlorine detached themselves from the rod, and passing to the silver plate, attacked its polished surface, producing a layer of silver subchloride. As the action continued, and this layer increased in thickness, the plate showed in succession the series of colors due to the action of light on thin transparent plates. After the surface had become gray, yellow, violet, and green in succession, the plate was removed from the solution, washed with distilled water, dried over a spirit lamp, and carefully polished with a velvet pad, after which process it was ready for exposure.

Although a plate treated as above reproduced the colors in their true tints, and with very considerable brilliancy, its sensitiveness was but small. When submitted to a powerful solar spectrum, an exposure of nearly an hour was required to reproduce the colors; and to get a picture in a camera an exposure of many hours was requisite. When exposed to the light under pieces of colored glass, the colors of the latter were rapidly reproduced.

Becquerel also discovered that heating the plates after chlorinating greatly increased their sensitiveness. A strong heat for a short time had, however, the objectionable effect of considerably altering the tint of green and yellow colors; but with prolonged heating at a moderate temperature, sensitiveness could be increased without any bad influence on the results. With these baked plates a very curious phenomenon was witnessed, for white light was found to have a bleaching effect on the silver subchloride, producing white, and not black, as is usually the case. Prolonged exposure to the light under ruby glass, or under ruby and cobalt glasses, was found to have very much the same effect as the baking process.

(*To be continued.*)

THE NEW RAPID GELATINO-CHLORIDE PAPER.

[Abstract of paper read by F. C. Beach, before meeting of the Society of Amateur Photographers, March 10, 1885.]

In bringing this subject before you this evening, I do not claim to present anything specially new so far as my experiments have been made, but I desire to call your attention more particularly to the qualities of the paper, the advantages it affords the amateur, and how easily it may be prepared.

Unlike argentic gelatino-bromide paper, this paper may be toned to any desired color after development, which, in the eyes of some is a great advantage. It does not fog during development; a bright yellow light can be used during the various manipulations, and the image stands out from the paper in better relief than is ordinarily the case with bromide paper. It seems to be a pleasing medium between the extremely rapid bromide paper, and the ordinary ready-sensitized albuminized silvered paper. I have heard much complaint of the difficulty of obtaining purple tones with the ordinary ready-sensitized albumen paper; many users have abandoned it, and taken to sensitizing their own paper, which is doubtless a good way, but somewhat troublesome.

If therefore we can either make for ourselves, or purchase ready-made, a reliable gelatino-chloride paper which shall possess all the advantages of good silvered albumen paper with none of its defects, something which can be readily toned and controlled, and be of so great a sensitiveness that sunlight will be unnecessary, and at the same time keep good till we want to use it, we shall have an article which will aid us very materially and mark an advance in photographic manipulation.

Hearing of several favorable accounts of the paper, I was led to send for a sample, and recently received a few sheets from Messrs. Morgan & Kidd, of Richmond, England, named by them "Contact Printing Paper," and I propose to experiment to-night with this and perform before you the operation of exposing, toning and fixing, in order that you may observe the interesting changes which occur.

First, make up the following solutions:

No. 1.

Silver nitrate................	100 grains.
Citric acid.................	100 grains.
Water...	3 ounces.

No. 2.

Chloride sodium (chemically pure)....................	20 grains.
Bromide of potassium........	40 grains.
Citric acid..................	100 grains.
Gelatine (Nelson's No. 1).....	40 grains.
Water....................	3 ounces.

These may be made up by daylight, going into the dark room illuminated by a great abundance of yellow light; heat the two solutions in a water bath until they reach the temperature of 150 degs. F., then pour No. 1 into No. 2 in a steady stream with constant stirring. Now take 200 grains of Heinrich's gelatine, which has already been allowed to swell in cold water, and add this to the hot emulsion, in which it will readily dissolve.

In a few hours after setting the jar containing the emulsion in cold water the emulsion will set and form a jelly; but the easiest way is to let it stand over night in a cool place. The next morning it may be removed from the jar by a spoon or knife, and is squeezed through a piece of coarse canvas into cold water, and washed for three or four hours in running water, after which it should be drained and half an ounce of alcohol added; then melted in a water bath at a temperature of 140 degrees, F., and then filtered through two thicknesses of a pocket-handkerchief. It will now measure about 10 ounces, and while warm is ready to be put on the paper.

The coating of paper with gelatine emulsions has generally been troublesome, but Mr. Wellington's plan is quite simple and practical. The paper should be cut up into pieces about half-plate size and put into a dish of warm water to soak; in another dish of warm water several half-plates should be placed for the purpose of warming them, or they may be held in a rack before a fire.

One of the warmed half-plates is now taken on a pneumatic holder and a piece of wet paper slipped on to it, avoiding any air-bubbles; the surplus water is next drained off for a few seconds, and a pool of the warm emulsion (about 2 drams) poured from its receptacle on to one end of the plate. It will be found to flow as easily as collodion, and by a slow motion and tilting the paper will be easily and uniformly coated.

The temperature of the emulsion when it is poured on should be reduced to 110 degrees, F., if hotter than this it is liable to cause bubbles.

As the emulsion is a slow one, the correct exposure behind a clear negative has been ascertained to be between twelve and fifteen minutes, 9 inches away from a fish-tail gas-burner.

The developer recommended is that of Mr. J. B. Edwards, made as follows:

No. 1.

Oxalate of potash........ ...	960 grains.
Chloride of ammonia (chemically pure).....	40 grains.
Distilled ice or rain-water.....	20 ounces.

No. 2.

Sulphate iron................	240 grains.
Citric acid......	180 grains.
Distilled ice or rain-water.....	20 ounces.

No. 3.

Bromide of potassium or ammonia......	480 grains.
Water to make up to.........	3 ounces.

To develop, take equal parts of Nos. 1 and 2, and to each ounce of the developer thus formed add 1 dram of No. 3. The image appears in about one and a half minutes, and if the exposure has been correct, the development will be completed in five minutes, and the picture will possess a marked red color.

After developing, the prints should be rapidly rinsed in three or four changes of water and placed in a strong solution of ordinary white alum for ten minutes.

They must again be well washed in several changes of water, and then toned in the following bath :

Acetate of soda..........	30 grains.
Chloride of lime	3 grains.
Chloride of gold.........	1 grain.
Boiling water...........	6 ounces.

Let this cool and immerse the prints, turning and moving them as with the ordinary silver prints. In a short time they assume a decided purple tint, which is lost again slightly in fixing, but in drying comes back in a much colder color.

The prints are now washed and fixed by immersing in

Hyposulphite soda...........	2 ounces;
Water........................	16 ounces;

in which they should remain ten minutes, though if the bath is not acid they will not lose in color even if left for half an hour.

The prints should now be well washed in changing water for several hours. A gloss can be imparted to them by taking a piece of clean glass, polishing it well with French chalk; the wet print is laid on this face downward, and the excess of water squeezed out by rubbing over the back with the fingers, and mopping with blotting paper. After drying spontaneously, which will require a few hours, the paper will readily strip off from the glass and possess a glaze equal to the best enamelled silver print.

As Messrs. Morgan & Kidd have perfected an excellent formula for developing their contact paper, I will here repeat it.

The solutions for developing are prepared as follows:

No. 1.

Hot water	1 ounce.
Neutral oxalate of potash	77 grains.
Bromide of ammonium	5 grains.

No. 2.

Hot water	1 ounce.
Sulphate of iron	12 grains.

Each solution should be filtered and allowed to settle clear before using. The normal developer is made by mixing equal parts of Nos. 1 and 2, always pouring No. 2 into No. 1. After development the prints should be at once washed thoroughly in several waters and then placed in

No. 3.—THE ALUM BATH.

Water	1 ounce;
Common powdered alum	24 grains,

for five minutes; if left longer they are liable to bleach out. The action of this bath is to harden the gelatine film and clear the print of any deposit left by the developer. The prints should be again washed in several changes of water and then immersed in the toning solution:

No. 4.

Water	1 ounce.
Acetate of soda	3 grains.
Chloride of lime	2 grains.

No. 5.

Water	4 ounces.
Chloride of gold	15 grains.

The bath is mixed by first adding to one ounce of No. 4, two drams of No. 5, and then diluted by the addition of ten ounces of hot water. The following would be the order, and the bath must be mixed only on the day of using:

No. 4.—Acetate solution	1 ounce.
No. 5.—Gold solution	2 drams.
Hot water	10 ounces.

This must stand until quite cool, then the prints may be toned. The prints will gain in vigor and tone in the bath, and it is necessary not to tone too far, as they dry darker than when in the toning bath. The tone may be best seen by looking through the print. After toning the prints should be well washed and placed in the fixing bath:

No. 6.

Water	1 ounce.
Hyposulphite of soda	120 grains.

They should remain in the above solution for ten minutes, and when removed, washed in running water for ten hours. In addition to fixing the hypo will considerably brighten the prints.

In mounting the prints they should be placed face downward on a French chalked glass plate, as described by Mr. Wellington, and when half dry are pasted over on the back with thick starch paste, allowed to dry spontaneously, stripped from the glass and trimmed.

To mount the print on the card simply moisten the surface of the latter with a damp sponge, and place the print backside down upon it in position and pass through the rolling press. The prints may also be burnished in the ordinary way.

Their method of making the exposure is by burning two inches of magnesium ribbon four inches from the negative. If daylight is used, five to twenty seconds; when passed through ground glass, one minute to an argand gas burner. They prefer the magnesium ribbon, and suggest a quick way of exposing several negatives at once, as follows: Arrange four printing frames into a square facing inward, place a small spirit lamp in the center, and light the magnesium wire from it, holding the wire with a pair of pliers.

It is necessary, in order to avoid stains, to wash the prints as quickly as possible after development.

In place of the usual toning bath, a dark, cold tone can be imparted to the prints after coming from the alum bath, with the following toning solution:

PLATINUM TONING BATH.

Water	3 ounces.
Bichloride of platina	1 grain.
Nitric acid	1 drop.

It is quite a satisfaction to know that Mr. Carbutt has taken up the manufacture of chloride plates and paper, and I hope by elaborate and continuous experiments he will continue to perfect the process and furnish the amateurs with a reliable and useful article.

I will next give the latest formula for development and treatment given by Mr. Carbutt.

I have reduced all solutions to standards of one ounce, thereby making it easy for one to calculate upon any quantity which it is desired to make up. The following are Mr. Carbutt's proportions:

No. 1.

Warm distilled rain or melted ice-water	1 ounce.
Neutral oxalate of potash	65 grains.
Chloride of ammonia	2 grains.
Bromide of potassium	1 grain.

No. 2.

Distilled or melted ice-water	1 ounce.
Sulphate of iron	12 grains.
Citric acid	6 grains.

I first make a slight over-exposure and then operate as follows: To develop a lantern transparency, take equal parts of No. 1 and 2, diluting with an equal quantity of water. The image should appear gradually, and will at first have a sandy-red color, which, as the development proceeds, turns to a warm brown color. The high lights will keep beautifully clear. The development should be carried up until the details in the high lights begin to appear. The same rule applies to the paper. The plate or print is next washed and put into a clearing bath:

No. 3.—ALUM BATH.

Water	1 ounce;
Powdered alum	48 grains,

for a few minutes—usually three or four minutes is sufficient—and is lastly transferred to the

FIXING BATH.

Water	1 ounce;
Hyposulphite of soda	96 grains;

and after fixing, the plate or prints are well washed. By a variety of combinations of developers different tones may be obtained.

I earnestly hope that the question of manufacturing and furnishing a reliable printing paper which can be readily worked by amateurs, will be agitated, as I believe there is room for improvement over the present methods. Whether the new paper will supplant the albumenized paper is doubtful; but one thing is certain, should the process be improved and the manipulation made simple, it is bound to fill a long-needed want, and be of benefit to the photographic community.

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YOUR welcome magazine reaches me regularly; I like the improved appearance very much. A. W. KIMBALL.

PARAGRAPHIC PENCILINGS.

BY G. H. LOOMIS.

Since my last batch of pencilings I have made brief calls at some of the Boston galleries, generally finding the proprietors in a state of anxious leisure, superinduced by too much waiting for a revival. Gen. Apathy is still in command of the business forces, and until there is an advance and general stirring up of trade photographers must expect nothing better than other people, it being understood that other people are expecting a good deal in the "sweet bye-and-bye."

At the two stock houses there are unmistakable indications that a fair spring and summer business is anticipated, for the goods are gathering in and being placed in position for convenient investigation.

There is no denying the fact that the inventors and makers of photographic supplies, in every department, are fully up to the advanced point of ingenuity and skill displayed in other fields of discovery, for it is nothing less than marvelous to witness the results in this line for the past ten years. The improvements in convenience and compactness of camera boxes, the comparative value of lenses, the astonishing stride in chemical preparations, and in all the accessories for both portrait and field photography, makes one feel that he is in the region of imagination instead of reality.

Meeting our venerable friend, Uncle Ben. French, at his stock rooms carried us back a score and a half of years —to our crude beginnings in the types and graphs. What a change, not so much in Uncle Ben. as in the trade he handles. Uncle Ben. is, no doubt, older than he was, but it is not so apparent as real. He looks still fresh and vigorous and appears to be in no hurry to vacate here for the hereafter. By a strange coincidence, after a short interview with Mr. French, we met upon Washington street, Father John Sawyer, whose stock trade dates back from 1846 to 1867, when he was succeeded by Geo. S. Bryant & Co.

To meet these two worthies the same day, after a long lapse of time, seemed to us a real gratification. It stimulated active and interesting retrospect, and we only regretted that time and convenience would not permit of a familiar chat over the changes that have occurred from then till now. At no distant time, should "we three meet again," or should opportunity favor, I will chronicle the result of a more extended interview.

Dropping in at the Brookfield street stock house, I miss the pleasant smile and cordial greeting of our lamented friend Codman, with whom, for many years, I enjoyed frequent social and business intercourse. The surviving partners, Messrs. Roby & Horgan, with an efficient corps of assistants, are, however, at their posts, and the good reputation of the house will, no doubt, be honorably maintained.

We note the death, by consumption, of their faithful bookkeeper, Mr. Geo. E. Cabot, whose vacant place has been filled by Mr. Kelly, formerly with Geo. S. Bryant & Co. While the firm lose a valuable man they are fortunate in securing the services of Mr. Kelly to his old position.

Mr. Geo. S. Bryant is at his home in Newton Highlands, enjoying business retirement, as best he can for one of his active temperament. With an experience of a dozen years on the retired list, we may unite with Brother Bryant in pronouncing it not of our choice, and only submit to its continuance as we had to at its commencement, by reason of ill-health. Of course we receive appreciatively the congratulations of our former fellow-craftsmen—that we have escaped these perilous times of ruinous competition, and try to extract all the financial comfort we can out of it.

Dropping in to the studio of Allen & Rowell the other day we found them in working order. To our interrogatory for the state of trade Mr. Rowell said that, while the past month or six weeks had been quiet, the year, as a whole, had fully realized, if not exceeded, their expectations. I need not allude to the character of their work, as it is the result of their acknowledged skill and care. This firm is still in the use of carbon of their own production for all portrait work above the cabinet sizes, and their customers and the public have come to know of its marked superiority over the silver print, resulting in a steady, but constantly increasing patronage.

As intimated in a former correspondence Mr. Earnest Ritz, recently associated with Mr. Hastings, is up and at it again at his old stand on Temple place, lately vacated by Homer & Co. We had but a moment to spare, but found Mr. Ritz in hopeful spirits and ready for the race. We observe that, for the reception room, he has retained the services of Mrs. Frye, for several years with Marshall and afterwards with Ritz & Hastings. Mrs. F. has had quite a lengthy service at the desk, and with recently improved health will, no doubt, be glad to meet her many acquaintances once more.

We passed a pleasant half hour with Mr. Hastings at his studio on Tremont street.

As sole proprietor he is actively and industriously at work replenishing, re-adjusting, and improving his already well-appointed establishment. At the time of our call the elevator was quite busy in its waiterage, and the evidences of business were fairly encouraging. At present we believe Mr. H. presides at the camera, but will at no distant day be reinforced with the services of Mr. Roberts, formerly with Notnan, but now operating in South America.

We will resume our visitations among the craft as leisure will permit, though possibly we may garner up no sensational items. It affords us great pleasure, however, to meet our old business friends and chronicle their progress, which we trust will prove continuous and profitable.

We have no minutes of the March meeting of the Boston Photo. Society, and can not swear that a session was held. We chanced, however, to meet the presiding officer a day or two after the meeting, who said he could give me no items as he was not there, by reason of forgetfulness, and this is my report.

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ENLARGEMENT.

The traveller or tourist when starting on his journeyings endeavours to compress into the smallest possible space, those things that pertain to the necessities of travel. If he has a photographic inclination, this apparatus also must needs be compact in order to present the least impediment to progress, and the enjoyment of his rambles. When one starts upon a journey for the pleasure of it, the idea of becoming a pack-mule detracts considerably from the enjoyment of scenery and other objects of interest. However healthful physical exertion may be under ordinary circumstances, there is no doubt that extra labor during warm weather is not conducive to comfort, and consequently mars any enjoyment that is to be obtained from life spent under the open sky, and upon heights where the cool breeze is like a healing balm, and the eye revels in the glory of the scene below.

To satisfy this desire for something portable in the way of photographic apparatus, the manufacturers have devised various small cameras and their appurtenances. Now a small camera necessitates the use of small plates, and these in turn called forth the wish for something with which to enlarge them if necessary. This demand has also been met and we now have the Enlarging Box, which fulfills all the requirements its name implies.

This enlarging box, which was devised by Mr. T. C. Roche, is at once simple and effective, and we have had much pleasure recently while using it. It consists of a black wooden box containing a good kerosene lamp; and the sides of the box have a number of grooves that carry a slide holding a large condensing lens, while another slide holds the negative you wish to enlarge. To the outside of one end of the box is attached a sliding bellows, to cut off the light coming from the condensor; and to the bellows is attached the objective with which the picture is focussed upon any white surface. In a few words, the enlarging box is a magic lantern so arranged that no light can come out of it, except that which passes through the objective.

The use of the instrument is as simple as its construction. The lamp is lighted and then adjusted in the box so that a shadowless circle of light is projected upon a white wall or other surface. This adjustment is effected by moving the condensing lens and the lamp nearer or farther apart. It is perhaps best to place the condensor in a groove near the objective, but sufficiently far from the end of the box to allow the slide containing the negative to be inserted. Having obtained a good circle of light, now place the negative in the slide and adjust the slide in the box, so that it is between the condensing lens and the objective, and as close to the former as you can place it. By means of the objective a good focus is now obtained, and we are ready for an enlargement.

Of course, rapid printing paper is necessary when using lamp light. The cap is placed on the objective and with the aid of red light, a piece of this rapid paper is adjusted on the surface where the image was projected from the enlarging box. A simple and effective way of holding the paper is to tack two common wooden laths upon a board in such a way that they will serve to hold the paper along two of its longer sides. In which case the board must be used to focus upon.

The exposure necessary will depend upon the density and character of the negative. With medium density in a portrait negative, one minute appears sufficient; but something also depends upon the paper used, those of English manufacture being rather slow. With a little care and the above mentioned simple contrivence, much pleasure and success is obtainable in enlarging small negatives. For portraits, this is wonderfully successful, and the use of the new "tooth" surface printing paper admits of the best crayon work upon these enlargements.

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OUR PICTURE GALLERY.

Numerous additions to this interesting collection have arrived since our last notice.

Mr. Gayton A. Douglass sent a fine view of the ruins after a fire in Chicago, showing some beautiful effects produced by the freezing of the water upon the building during the severe cold weather that occurred when the fire happened. The immense icicles hanging from the various projections, tell a truly cold story, and the encasing of the fire ladder in one mass of ice shows how rapidly the water must have frozen.

Dr. L. H. Laudy, of the School of Mines, N. Y., has sent us a platinum print of a negative, showing Michel Angelo's celebrated picture of the "Last Judgment," in the Sistine Chapel, at Rome; the platinum proof seems to be well suited to this class of work, owing to the softness of the tone.

Mr. F. J. Haynes, of Fargo, D. T., donates a fine Cabinet portrait taken with the electric light. This is one of the best pieces of work of this kind that we have seen yet.

To go to a warm clime, we take two contributions from Mr. Isaac Haas, of Green Cove Spa, Florida. One of these is a very life-like picture of a gentleman sitting with one foot upon an alligator; the situation is a striking one, and full of action. The other picture is a long view of Green Cove Spa, not quite as well done as the first-mentioned, but yet very good. As they are first efforts, Mr. Haas is to be congratulated.

Three instantaneous views, by Mr. J. K. Moodie, of the Hamilton Amateur Photographic Society, are very good examples of photographic work. The steamboat is very good, but the boats in the yacht race are better; just one fault we must find with one of them, that is, the centre of the picture is almost bare; the yachts were caught too far apart to produce an artistic effect. Nevertheless, the result is undoubtedly good.

A picture of a young lady, by Mr. Swan, of Scuylerville, is an example of very good photographic work; it is artistic, and the work is of excellent finish.

A number of small cards and cabinets from Mr. C. D. Hardt, Quitman, Ga., exhibit some nice work in retouching, and bear very favorable comparison with work in this city.

Mr. D. G. Burrell, of Brockton, Mass., sends a few examples of work that show some good points. The small card of the cat is uncommonly good, as also is the little girl with the hood on; the others are not so striking, but are good work.

From Sig. F. Sartoris, of Portugal, we have some excellent examples of photographic work. The instantaneous portrait of the child is a gem; while the pictures of architectural work are unusually fine.

From Switzerland we are indebted to Mr. Camille Pictet for some very good views of the military camp of instruction. Also for some fine instantaneous pictures of a scene in Geneva on a fête day, and others upon the Lake of Geneva. A picture with a pretty light effect upon the sails of a yacht upon the lake is very pleasing, and the portrait of the cow with her keeper, is of unusual excellence.

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SOMETHING ABOUT ALBUMEN PAPER.

The following extract from a letter we have received will interest our readers:

I found some three or four years ago that by warming the dish in which I place the ammonia enough to cause a slight evaporation my paper worked better. At first I was *very* careful to use only a moderate amount of heat, and to fume ten or fifteen minutes. Last winter, when the black tones were called for, the formulas advised a half hour fuming. And I find now, by thinking back, that I began using the dish warmer. I had been using a slight, thin saucer, but that becoming broken, I took a heavy bowl, and would sometimes get that so warm as to be uncomfortable to the hands. Then would set it under the paper, and pouring in the ammonia a vapor would rise, and the bowl being thick and heavy would hold its heat for some little time and cause the box to be so heavily charged with evaporated ammonia that it would attack and dissolve the albumenized surface. And what puzzled me most was, some sheets, silvered the same time as others that did not show it at all, would show it badly. Again, sometimes paper silvered in the morning and toned at night would show no bad effect, while the balance of the same silvering (it might be parts of the same sheet) left till the next day or the day after, before toning, would be ruined. In the first case, the spoiled ones would hang just over the bowl. In the second case, the destroying action of the ammonia continues after drying and gets time to destroy the surface completely before it is formed.

I will have no further trouble in that direction. If I may offer a suggestion, I think it dangerous to advise setting the fuming dish in boiling water. If forgotten, or if the heat be too great, whoever may use it will get the effect I sent you—mealy surface.

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AMATEURS KILL THE BUSINESS.

BY S. D. WARDLAW,

President of the Rochester Photographic Association.

At the regular meeting of the Rochester Photographic Association, held March 9th, the President, Mr. S. D. Wardlaw, presented the following paper:

"In these days of advanced photography it seems strange to me to hear the oft-repeated remark that 'amateur photographers are killing the business.'

"I would like to ask the professional brethren here to-night to go back with me a number of years, to the days of Daguerre.

"I ask in all seriousness, if it was not for these men would not we all—I speak now to professional photographers—be working at some other business, had not these men given their earnest attention and time to the introduction and perfection of our art as understood in those days? And again, I would ask you to think of every improvement that has taken place in our profession. Has not the amateur been in the first rank, both as inventor and improver? Just here I would mention our own members Eastman, Mawdeley, Forbes and Walker.

"When the card photograph had about run its race, did not Adam Salomon, a sculptor and artist, and at one time an amateur photographer, give a fresh impetus to photography by introducing retouching and adding art principles to photography?

"The process now so generally in use, which we call instantaneous or dry plate photography, do we not owe almost entirely to the amateur?

"And if we stop to think for a minute, what right have we to suppose or expect these new processes and improvements by *amateurs* were they only intended or ought only to be for our advantage and pecuniary benefit?

"Then I dispute the saying that amateurs are ruining our business; rather are they a direct benefit to the painstaking photographer. For years the cry has gone up from amongst professional photographers, "that the public are not judges of good photographs." That if the people were only able to discriminate between good and bad photography, then the millennium—so far as photographers were concerned—would indeed be at hand.

"Now, there is no better way to instruct the public in regard to our art than to have them try it themselves.

"When they are able to make, and appreciate a good piece of work of their own production, the more liable and willing will they be to give professional photographers the credit due when *they* produce a creditable work.

"If the indifferent, careless or cheap photographs get crowded out by the superior ones, produced by the painstaking, careful, educated and artistic amateur, so much the better for photography, say I, and I for one will always cheerfully and to the extent of my little ability help the amateur in his attempt to master the difficulties which at first beset his path, and in so doing I will only be in a slight measure repaying to amateurs the many and great obligations I have received from them, both oral and written.

"The 'killing of the business' comes not, in my way of thinking, from competition with the amateur, but from amongst the body of professional photographers themselves. From the grasping and envious nature of a few (a few as compared with the number of photographers), whose tactics in the past have been to work for lower prices than their more careful and skilful professional brethren could well afford to do, and in this way secured to themselves a share of the public patronage which they ill deserved and worse requited. These are the ones who mostly rave against the amateur, and why? Because now appears on the field a new body, well equipped with apparatus, armed with brains, talent, ability, a desire to achieve, and with a love for the work in which they are engaged, and a hearty contempt for these same grasping, envious professional gentry and their productions, who have heretofore posed to the general public as *artists*, and what is better still, these same talented amateurs can afford to work to their own ends without a thought whether 'The World-Renowned Photo Artist, Mr. Muddle, makes twenty-four cabinets, and a panel thrown in, for 25 cents' or not. Aye, there is the rub. These professional 'Cheap Johns' who vainly rage against the amateur, would be in the seventh heaven of contentment if they could only afford (providing always they had the ability) to make pictures at a lower rate than these same amateurs (that is for pleasure).

"Gentlemen professionals, in conclusion I would say, take the same pains to secure a good, creditable piece of work, bring to such work the same love and ambition to excel that does the amateur, and when you have completed your picture put upon it the same value the amateur places upon his, and my word for it you will no longer look on the amateur as your enemy, but your friend."

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

To the Editors of the BULLETIN:

OUR beautiful Music Hall is in ruins, but the Photographic Association still lives. I have been able to secure the new State Arsenal on Broadway, near Main street, for holding our next convention. It is the most magnificent building for that purpose in the land, having forty thousand square feet on one floor, without a partition or pillar to obstruct the view. In a few days I shall have a diagram complete to send to all exhibitors, and those who have already engaged space will be assigned relative positions, as in Music Hall. As the light is good in every part of the Arsenal, no one who exhibits will be put in a dark corner. There is also a hall in connection, with ample room to hold meetings; and with six thousand square feet already sold, there is no doubt but that the coming convention will be a grand success.

Yours fraternally,
H. McMichael,
Secretary.

P. S.—Since writing the above I notice an article in the *Photographic Eye* stating that it is possible of a change in the date of holding the convention. As you will see by the above letter, there is no need of change of date.
H. McMichael,
Secretary.

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THE POSTAL PHOTOGRAPHIC CLUB.

The scheme for establishing the above club has met with sufficient response to warrant those interested in the idea in proceeding to its organization. The following named gentlemen have consented to act as a committee: F. C. Beach, J. S. Rich, H. V. Parsell, Randall Spaulding, C. W. Canfield.

The rules adopted and the officers elected will be announced in our next issue.

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[*From the Author.**]

THE BEHAVIOR OF THE HALOID SILVER COMPOUNDS IN THE SOLAR SPECTRUM.

The Increase of their Sensibility to Individual Parts of the Spectrum by Coloring-Matter, and Other Substances.

BY DR. J. M. EDER.

The effect of the solar spectrum upon silver salts was studied first by *Scheele*,[1] 1777, then *Senebier*, 1782,[2] with chloride of silver; after which, in 1801, the chemically active ultra violet rays were discovered by *Ritter*,[3] and almost simultaneously by Wollaston,[1] also by means of chloride of silver. *Herschel*[2] examined more minutely the behavior of different silver and iron salts, coloring matter of flowers, etc., in the spectrum (1840) without having obtained Frauenhofer lines.

Becquerel[3] was the first to photograph these in 1842 and 1843. *Becquerel*, as well as *Draper* (1843)[4] worked principally with Daguerreotype plates, by means of which the latter discovered the infra-red rays.

Crookes[5] first examined in 1853 and 1854 the influence of the solar spectrum upon iodide and bromide of silver in the wet collodion process, with pyrogallic acid and sulphate of iron development. After him came *J. Müller*, 1856,[6] *Helmholtz*, 1857,[7] and lastly, *Rutherford*, *Mascart*, *H. C. Vogel*, *Cornu*, and others.

While it was the purpose of those mentioned to produce the most complete representation possible of lines in the solar spectrum, *Schultz*, *Sellak*,[8] *N. W. Vogel*[9] and *Abney*[10] paid attention to the sensitiveness of different silver compounds to the spectrum in the wet and dry collodion process, and the two latter, as well as *Schumann*,[11] extended their observations also to bromide of silver gelatine emulsions. But as the information of the last three gentlemen is in some parts contradictory, and the silver emulsions in gelatine (gelatine dry plates) have, so far, not been studied much, I subjected them to a closer examination.

In these examinations, the object of which is the sensitiveness of different silver compounds to rays of different wave length and determination of the maximum action, the construction of the spectrograph is of great importance. According to the transmitting power of the prisms and lenses, the maximum of action is displaced considerably, as is also the extension towards ultra violet.

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* Paper communicated to the Imperial Academy of Vienna.

1. *Scheele* :—"Æris atque ignis examen chemicum." Upsala 1777, page 62; German: Chemische Abhandlung von der Luft und dem Fener." 1 edit., 1777; 2d edit. 1782.

2. *Senebier* :—"Memoires physico-chimiques sur l'influence de la lumiere solaire pour modifier les etres des trois règners de la nature." Geneve, 1782.

3. For the first time published, Feb., 1801, in the "Erlanger Literatur Zeitung."

1. Philosophical Transact., 1802, page 379. Gilbert's Annalen, Vol. XXI, page 416, and Vol. XXXIX, page 291. These and the above mentioned treatises are communicated in extract in Eder's "History of Photo-Chemistry." (Photo. Corresp. 1881, etc.)

2. Philosophical Transact., 1840 and 1841, and Lond. Edinb. and Dubl. Philos. Jour., 1843, Art. 19, page 44.

3. Biblioth. univers. de Geneve, 1842, Vol. 40; also Becquerel, "La Lumiere," 1867; Vol. 1, page 138.

4. Philosoph. Magaz. (3) Vol. 22, page 360.

5. Jour, Photograph. Society, London, 1853, Vol. 1, pages 77 and 98; 1854, Vol. 2, page 293; Poggend. Annal, Vol, 97, page 616.

6. Poggend. Annal. Vol. 97, page 135.

7. Verhandlungen natur. Versaml Rheinl, 1859, p. 17; Kreutzer's Jahresbericht Photogr. 1857, page 328.

8. Berichte d. deutsche chem. Gesellsh, Vol. 4, page 210, etc.

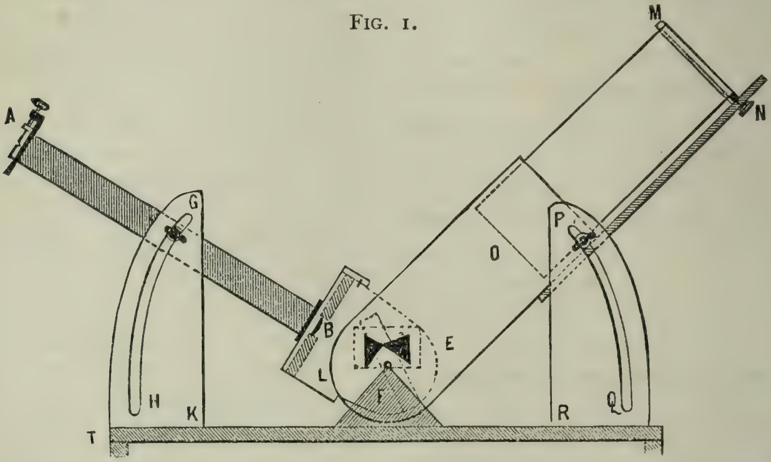
9. Poggend. Annal. Vol. 153, page 223; also Berichte deutsche, chem. Gesellsh, 1874, etc.

10. Photographic News, 1882, page 181.

11. Photgr. Wochenblatt, 1882, 1883, etc.

Stokes having already discovered about the year 1852 (by means of fluorescing substances) that quartz allows the free passage of ultra violet, Crooks made use of the same in 1854 for his experiments. He applied two rock crystal prisms with an angle of 55°, which were cut in a manner that the rays penetrated the rock crystal in the position of the minimum of deviation parallel to the optic axis, that is they were cut vertical to the axis. Fig. 1 shows a sketch of Crooke's apparatus. A is a changeable slit, B the collimator lens, L and E the prisms, removable at F, O the photographic camera. At MN is the sensitive plate. At GKT and PQR the several parts are removable.

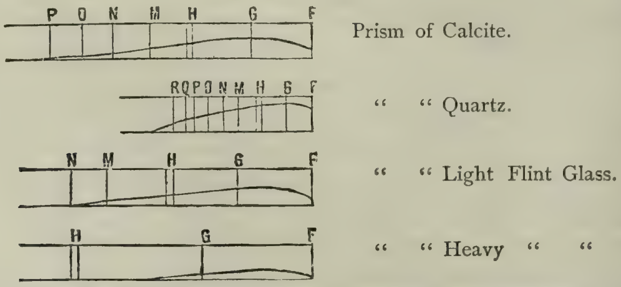
FIG. 1.



Calcite (Iceland spar used by *Mascart* when photographing the solar spectrum up to T, by means of a Norbert diffraction grating with application of calcite prisms), is also considered very transparent for ultra violet [1]. *Huggins* photographed the spectra of the stars by means of one calcite prism and two quartz lenses [2]; *Cornu* had a similar apparatus in the beginning, but designed his table on the ultra violet solar spectrum from views with quartz prisms, consisting of two halves of right and left rotating quartz, with a refractive angle of 40° each, cemented together.[3]

The influence of the substance of the prism upon the extension of the spectrum, as well as the position of the maximum of action upon the bromide of silver gelatine plates can be seen in Fig. 2.

FIG. 2.



I drew the same from comparative sketches prepared with great care by Engineer Schumann, in Leipsig (though not yet published), by means of a spectrograph, with quartz calcite lenses and different prisms of 60°.

The length of the spectra and the distance of the Frauenhofer lines, in Fig. 2, show the difference of dispersion from prisms of quartz, calcite, heavy flint, and light flint glass. The elevation of the curve represents the intensity of the photographic image and the position of maximum action upon bromide of silver gelatine.

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[1] Compt. rend. 1864, Vol. 58, page 111; Annal Scient. de l'ecole normale, 1864. *Becquerel*, "La Lumiere," 1868, Vol. 1, page 140. Schellen, Spectral Analysis, 1883, page 426.

[2] Compt. rend. Vol. 91, page 70.

[3] *Cornu:* Sur le spectre normale, du soleil, ultra violet part., 1882. (Gauthiers, Villars, Paris) in which the apparatus is distinctly described. Also, Cornu's Treatise: Annal de l'ecole normale, 1874 (2), Vol. 3, page 421; Arch des sc. phys. et nat. (2), Vol. 53 (1876), page 50: Compt. rend., 1878, page 101; Addendæ to Annal Phys. Chem. 1878, page 339.

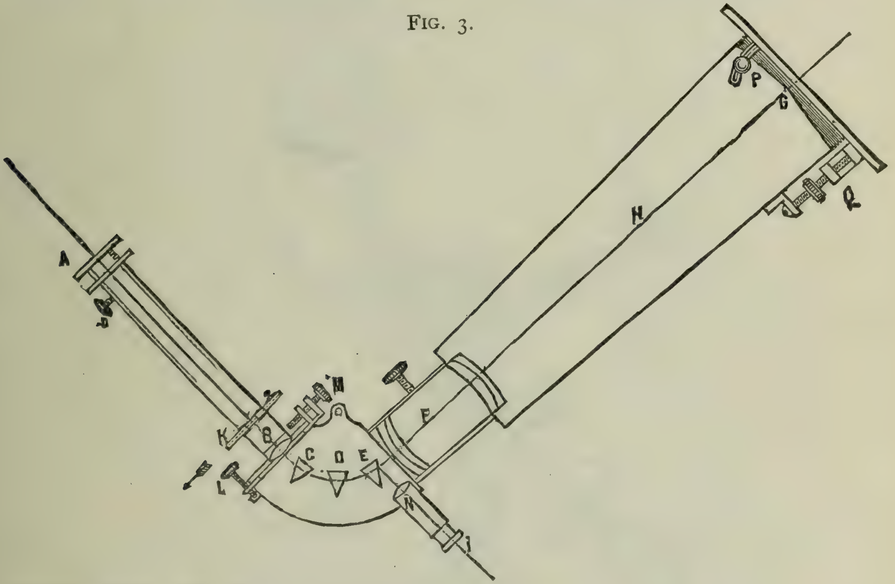
By means of the quartz prism [1] a spectrum is obtained up to above R in ultra violet (Cornu's designation); with calcite [2] the action, under the same exposure, does not extend so far into the ultra violet; namely, to above P; with heavy flint glass the action does not reach even to the terminus of the visible violet; namely, to half the distance from H to G; with light flint glass it reaches toward N, in ultra violet. The maximum of action with quartz and calcite was further towards G; with glass towards F.

Fluor spar, which was used by *Cornu*, with quartz for achromatizing lenses for photographing the ultra violet spectrum, was found by Schumann very transparent for ultra violet rays, but quartz seems to surpass it.

Mr. Schumann tells me, as a result of his thorough experiments, that he prefers simple quartz lenses in place of achromatic quartz-calcite lenses for photographing the spectrum at all times, where a clear definition of lines is in question. The lenses should not be cemented for such purpose, Canada balsam taking up the ultra violet rays.

How injurious very thin glass vessels are for the study of the ultra violet spectrum is shown in the experiments of *Mr. Schumann*, where a microscope covering glass of the thickness of 0.125 m. m. absorbed one-third of the outside ultra violet rays of the magnesium spark (above $\lambda = 277$); this result is of some importance in the photography of the spectra of Geissler tubes.

FIG. 3.



During my spectrographic experiments a large spectrograph of *Dr. Steinheil* in Munich was at my service, and a small spectrograph with direct vision prisms, also from Steinheil. Both instruments had been purchased by the Vienna Photographic Society, and had been constructed under my directions. The optical parts had been executed by Dr. Steinheil according to his latest experiences. Fig. 3 represents a profile view of the large spectrograph. The light which passes the adjustable slit A, in the focus of the objective B, falls upon the three prisms, C, D and E, all consisting of light flint glass, and possessing a refractive angle of 50°. The spectrum produced is thrown by a photographic objective F upon the plane G, at the end of the camera H, where it can be photographed.

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[1] A simple quartz prism, cut vertical to its axis gave the lines of the spectrum double in Mr. Schumann's examinations, although the rays passed theoretically correct, as mentioned above with Crooke's apparatus. The evil, which is a consequence of double refraction, can be removed, not only after *Cornu's* method by fastening together a right and left rotating prism, but also according to *Schumann* by two separate quartz prisms of 60° each, of which one is out of left handed and the other of right handed quartz, cut vertical to the axis. The dispersion is then about the same as with a calcite prism, but the extension towards the more refractive side is greater. Schumann found no difference between biconvex and planoconvex lenses in the spectrograph, while Cornu recommends the planoconvex. The quartz lenses demand a very considerable inclination of the plate to the tube axis of the camera, namely 22 to 24°; but Schumann succeeded in overcoming this by stops of from 2 to 3 decimetres. In this case the plate can be placed vertical to the tube axis, but the loss of light is considerable.

[2] The spectrum with one calcite prism (cut vertical to the axis) showed in Mr. Schumann's photographic views the Frauenhofer lines perfectly sharp; with two or more he could not obtain clear spectra, notwithstanding all care. The handsome line groups in the ultra violet looked partly like spiral columns.

The objective of the sliding telescope has an opening of 34 m.m. and a focal length of 325 m.m., while the photographic aplanatic objective F has an opening of 54 m.m. and a focal distance of 600 m.m. The lenses are composed of glass, which absorbs the least blue to ultra violet rays, for which reason a large illumination is obtained in the blue and violet parts.

The refractive power of the prisms is for the lines

D.................. $n = 1.57852$
F.................. $n = 1.58829$

Their opening is 47 m.m.

With the spectrum, a scale J can be photographed simultaneously, which, enlarged by the photographic objective N, and reflected on the last face of the prism, is also thrown upon the surface of the sensitive plate. K is a so-called guillotine instantaneous shutter, to give a quick enough exposure while working under direct sunlight. The two screws L and M serve to change the sliding telescope, to bring special parts in the spectrum, when photographed, into the middle of the plate and upon the minimum of the prism deviation. At P and Q the plane of the sensitive plate can be inclined. The sliding bed [1] of my apparatus admits an exact adjustment of the

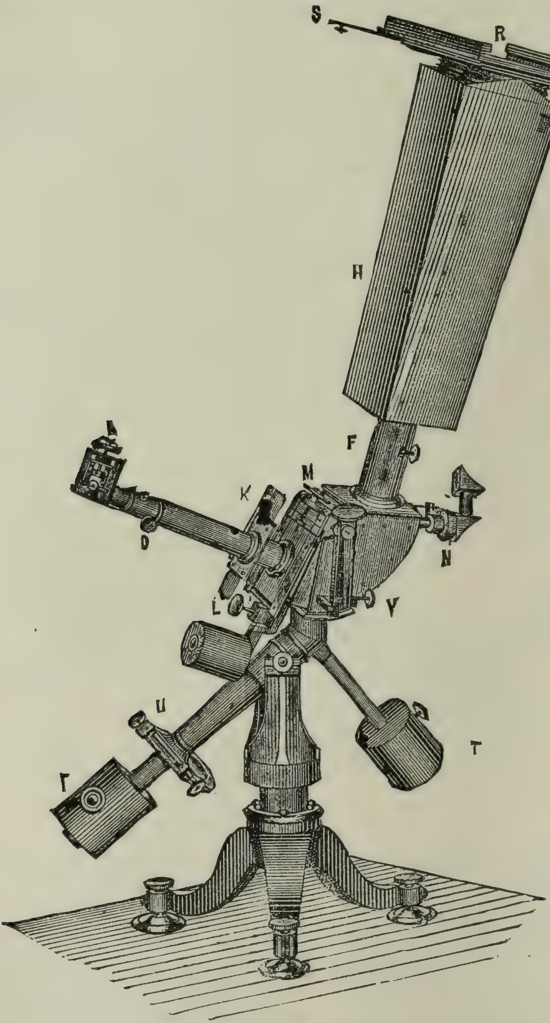

FIG. 4.

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[1] The sliding-bed is patented in Germany. (Germ. Emp., Pat. No. 17092.)

slit-opening to $\frac{1}{1000}$ m.m.; the slit edges are of platinum, and a micrometer screw serves to effect their motion. A slit-opening of 0.02 m.m. gave a very good sharpness to the Frauenhofer lines.

Less frequently, I worked with a slit-opening of 0.04 to 0.1 m.m., the lines losing much sharpness.

STEINHEIL'S LARGE SPECTROGRAPH.

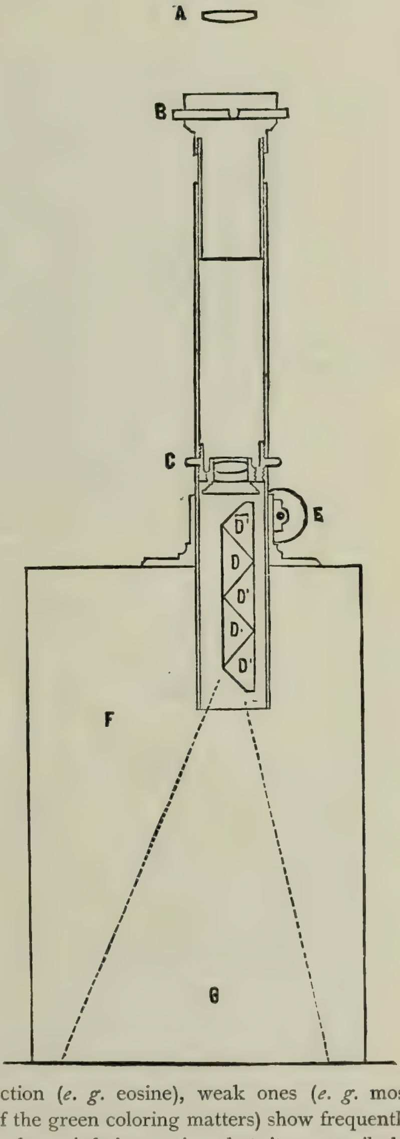
Fig. 4 shows the outer view of the Steinheil spectrograph. At A is the slit, which by means of the pinion O can be brought nearer to or removed from the lens B. The shutter K (guillotine instantaneous shutter), has inside a round opening, and can be set off rapidly by means of a spiral spring, so that an instantaneous exposure takes place; but by means ot a trigger the shutter can also be kept open any length of time. L and M admit the removal of the sliding telescope, and the change of inclination of the same to the prisms. Inside of the brass body are three prisms. N contains the comparison scale; F is the photographic objective; H the wooden camera. At R the plateholder with the sensitive plate is introduced; upon such a plate of from 12 to 16 c.m. length, three spectra can be taken in successsion by a sliding movement. SS are diaphragms (blackened brass), which are intended to cut off the blue or red end of the spectrum, just as needed. The whole instrument is balanced by the weights TT, and by means of the screws U and V can be turned towards the sun without any shaking. The application of a Heliostat, which always affects changes in the quality of sunlight,[1] is thus avoided.

The length of spectrum, given by this apparatus, is 12 c.m., from the Frauenhofer lines A to N; above N the ultra violet could not be photographed very well, the absorption of the rays, whose wave length is under 350 m.m., being too large. The lines of the spectrum are very sharply and well defined. The time of exposure deviates, of course, with the sensitiveness of the preparations.

Bromide of silver gelatine plates were exposed in direct sunlight and a slit-opening of 0.04 m.m. "instantaneously" (that is, $\frac{1}{10}$ to $\frac{1}{20}$ of a second) to 1 second; plates tinted with Eosine colors required from two to four times, with Cyanine a little longer, with Iodine green, Methylviolet, etc. colored plates, required even ten to 160 times' longer exposure as soon as the action of light in the red part appeared.[1]

If the spectral apparatus is directed towards the blue sky or clouds, the lines are never obtained so sharp as in sunlight; although very good optical sensitizers show distinctly their action (*e. g.* eosine), weak ones (*e. g.* most of the green coloring matters) show frequently such an inferior action that it can easily be overlooked.

Fig. 5.



The small spectrograph was—aside from a few changes—constructed according to *H. W.*

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[1] Silver mirrors reflect only the less refractive rays, but absorb the ultra violet ones; platinum, on the contrary, in layers which are completely transparent, furnishes an excellent mirror for ultra violet. (De Chardonnet, Cornu.)

[1] Eosine plates require from 1 to 5 seconds' exposure; iodine green plates from 1 to 3 minutes.

Vogel's directions ;[1] it is a direct vision spectroscope, fastened to a camera, and the spectrum picture is projected upon the wet plate without the aid of a photographic objective.

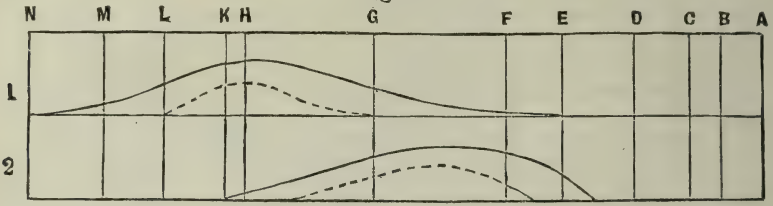
Fig. 5 represents my small spectrograph (of Dr. Steinheil). Before the slit B is a condensing lens A, which concentrates the light upon the slit. The objective C of the telescope has a focal length of 81 m.m. The prism combination consists of 3 crown glass prisms D′ of $100^{0}20''0'$ refracting angle, [1] and two flint glass prisms D of $105^{0}0'0''$ refracting angle.[2] The dispersion from D—F is equal to $4^{0}6'40''$, therefore for the whole spectrum A—H about 15^{0}. The spectrum is photographed in the camera F; at G is the sensitive plate, which can be changed five times in a sliding-plateholder. The screw E enables the changing of the spectroscope to get the lines into focus.

Such an instrument gives almost no spectrum of ultra violet, but only a little beyond H ; it can be handled easier than the larger spectrograph, but gives less clear spectra.

The influence of both instruments upon the distribution of the chemical action of the solar spectrum is considerable. The combined crown-flint glass prisms in the direct vision spectroscope weaken the visible violet very much, as shown in Fig. 2 ; this reduces the action of the solar spectrum obtained with it remarkably in the violet upon bromide of silver and chloride of silver gelatine emulsion. This appears strongest in chloride of silver gelatine (with citrate of iron developer), which, in the large spectrograph with flint glass prisms, shows the maximum of action at H at the beginning of the ultra violet, (Fig. 6 curve 1 ; the dotted line shows the result with shorter exposure), while in the small spectrograph (direct vision) the maximum is between G and F (Fig 6 curve 2). The difference of both curves, as Fig. 6 shows, is so great that one hardly believes the same silver salts were used for the two.

The change of the maximum of action can even be observed in very large spectral apparatus according to whether violet or blue-green is brought into the middle of the field of vision. The judgment of different modifications of the bromide and chloride of silver, according to the maximum of sensitiveness, is therefore uncertain and only of a relative value.[2]

Fig. 6.



It is, therefore, so much the more remarkable, that the maxima of the sensitizing action of color-matter in red, yellow and green appear so energetic, and, as far as my observations reach, they appear on the same place in every apparatus, of course more or less intense, according to the distribution of light.

My tests, which follow, were executed with the large Steinheil spectrograph, and can, therefore be compared among themselves.

(*To be continued.*)

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The BULLETIN has already been worth more than a year's subscription to me. I do not want to be without it. Long live the BULLETIN ; it serves as a beacon light to the photographer who is far away from the great leaders, and he can, through it, see his way clear. Success to the men who have done so much for us, and the great leading spirits who give us so much for so little.

P. ERSLY, *Texas.*

Messrs. E. & H. T. ANTHONY & Co.:

GENTLEMEN,—I have taken the PHOTOGRAPHIC BULLETIN for the past fifteen years, and consider it one of the best journals published, and would advise all that want to sell goods, not to forget the BULLETIN when they advertise.

Yours truly,
W. F. ASHE.

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[1] The exact description in Eder's "Complete Handbook of Photography, Halle, 1884, vol. 1, page 42 ; further, Shellen, Spectral Analysis, 1883, page 440.

[1] The refractive power of the flint glass prisms is:
$nD = 1.6533$
$nF = 1.6669$

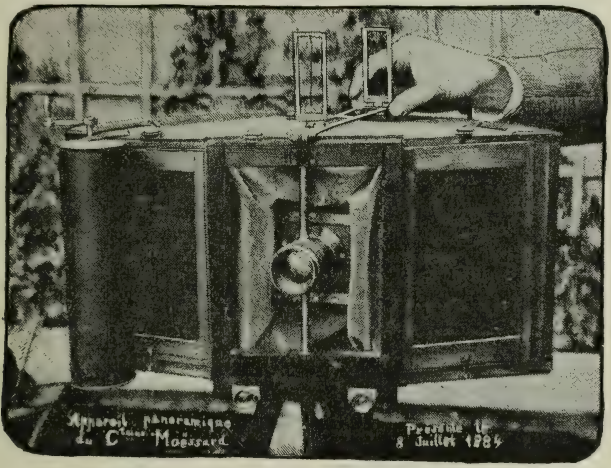
[2] The refractive power of the crown glass prisms is:
$nD = 1.5107$
$nF = 1.5168$

[2] The division of the bromide of silver, according to Prof. Vogel, into blue sensitive and indigo sensitive (Berichte der deutsche chem. Gesell. 1881, vol 17, page 1034), but which does not appear in Abney's works. (Proced. Royal Soc. 1881, page 217, Photo. News. 1882.)

FOREIGN NOTES.

[From our London Correspondent.]

The Panoramic Camera of Captain Moessard.—Panoramic cameras have never come into general use for pictorial photography, and probably never will; but notwithstanding this, there are occasions upon which they will be useful, as, for example, in making photographic records of the progress of great engineering works and for military purposes. A form of panoramic camera which should be very easy to construct, and which contains no complex clock-work mechanism, has been constructed by Capt. Moessard, and the subjoined Meisenbach block representing the apparatus, is taken from the *Photographic News*, this journal having made the reproduction from an albumen print, which appears in the *Bulletin* of the Versailles Photographic Society:



In explaining the principle upon which the apparatus is constructed, it may be mentioned that if a photographic objective is made to rotate on an axis set at right angles to its optical axis, and this axis of rotation passes through the optical center of the lens, there will be no shifting of the images on the focusing screen. As the lens rotates fresh objects come into view, and those first depicted die out, but nothing moves. The panoramic cameras of Johnson, Liesegang and others are all based upon this fact. The Meisenbach print will show how the lens is made to rotate in Captain Moessard's apparatus: two vertical rods which are attached at right angles to the lens mount work in bearings, and the board which carries the lens-flange is connected with the main body of the camera by a piece of cloth, so as to allow of this rotation. The sensitive surface is a film bent to a curve, having a radius equal to the equivalent focus of the lens, and in order to limit the photographic action to that portion of the sensitive surface corresponding to the center of the lens, two screens of blackened cardboard are attached to the rotating point; these screens coming tolerably close together near the sensitive film, so that only a narrow vertical strip is under exposure at any given instant. In other respects the block scarcely requires explanation, but it may be mentioned that Captain Moessard finds it easy to make the exposures by hand; the lever carrying the sights being moved from right to left, or *vice versa*, at such a rate of speed as may be judged proper.

State Competition with Photographers.—In previous letters I have alluded to the Inventions Exhibition, which is to open at our suburb of South Kensington, on the 1st of May, and one feature which the executive propose to introduce is creating some indignation among photographers here. The executive have invited tenders for an exclusive right to photograph in the exhibition, and, more than this, they propose to sell the right to erect a portrait studio in the exhibition, and the tender is to state what proportion of the receipts the contractor will hand over. If this arrangement is carried out, the executive will virtually become partners in the portrait business. There is no attempt at making believe that new processes are to be shown in the portrait studio; it is simply a business affair, having nothing to do with the ostensible objects of the exhibition. Country photographers are especially indignant, as they contend that their customers will put off being photographed until the occasion of their visit to the exhibition, partly to secure a memorial of the occasion, and partly as a result of a notion that at an "Inventions Exhibition" they will secure pictures made by the latest and most improved process.

Isochromatic Photography.—This subject is attracting much attention now, and Dr. Vogel finds that it is better to cover the original with a sheet of white glass covered with a tinted collodion, than to use any commercial yellow glass. In fact, the yellow glass of commerce varies so much in quality that much difficulty has been experienced in working with it. He now uses thin white patent plate glass coated with a collodion, to which methyl-orange has been added. Azaline plates, which require nearly six times the normal exposure with yellow glass, will give equally good results with only three and a half times the normal exposure, when the glass coated with yellow collodion is used.

Development of Carbon Prints.—The carbon printer is hardly likely to adopt M. Cornet's suggestion to use a twelve per cent. solution of ammonium sulphocyanate instead of hot water for developing carbon prints, but Professor Leon Vidal points out that the sulphocyanate solution may be useful in developing a Woodbury-type relief, as in this latter case the development may extend over a period of twelve hours, or more, it is sometimes difficult to keep the water at a uniform temperature.

Improvements in Phototype Blocks.—Mr. Pearson, of Birmingham, communicates to the *Photographic News* some details of a method of applying the photo-engraving method of Obernetter to the production of typographic blocks.

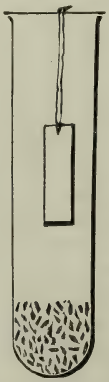
A grained negative is made of a gelatino-bromide plate by first exposing the plate in the camera, or under a transparency, then exposing it under a fine net-work to give the grain, and afterward developing. When fixed, the image is converted into chloride of silver by some well-known method, such as immersion in the following solution :

Water....................	4 ounces;
Hydrochloric acid..........	¼ ounce;
Bichromate of potassium....	1 dram;

and the plate is placed with its film side in close contact with a slab of polished zinc, when the metal is gradually etched by the action of the chloride of silver. The action is still more rapid if the negative is moistened with a strong solution of chloride of zinc. Copper can be used instead of zinc, but in this case it is well to assist the action by an electric current. The negative film is stripped from the glass, laid on the metal plate, and backed up with any conducting surface. The positive wire of the battery is connected with the metal to be etched, and the negative pole with the conducting surface at the back of the film. In order to avoid using a reversed negative, the film may be stripped, whether the battery is used or not.

The Fading of Prints.—The presence of sulphides in paper seems to be a long unsuspected cause of fading. The blue pigment, ultramarine, is often added in order to mark the yellow tint of the pulp, and then again sulphide of calcium is often formed by the reduction of the sulphate of lime, now so largely used as a loading material. This reduction takes place readily, when pasteboard is kept in a damp place, the organic matter becoming oxidized at the expense of the oxygen of the sulphate of lime. It is scarcely necessary to say that the sulphides referred to are very easily decomposed by acid vapors, or acid products of fermentation and the sulphuretted hydrogen rapidly destroys the photograph, even if the sulphides do not act directly on the silver image.

The *News* tells us how to test for sulphides in any sample of paper, or card, and I quote the parapraph :



"How to test for sulphides in cardboard is the next point. Take a glass tube, closed at one end, and slightly expanded at the neck—in short, a test tube about five inches long ; cut up some of the card or paper, add enough water to nearly cover it, and a piece of citric acid as large as a small pea. Now take a disk of paper that will cover the top of the tube, and hang from this by means of a thread a slip of white blotting paper which has been moistened with a solution of acetate of lead, one part in five or six of water. The whole apparatus is shown by the cut. If there is a very large proportion of any sulphide present, the lead paper will very soon blacken ; but if the proportion is small, the action will be less rapid. It is just as well to very slightly warm the mixture by holding the tube over gas or candle flame, but the heat should not nearly reach the boiling temperature; now set the apparatus aside (in an upright position) and examine it next day. If there is no darkening whatever of the lead paper, one may conclude the card to be free from sulphides.

PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

Meeting, March 16, 1885.

MEETING called to order with H. PUSEY in the chair.

The following officers were elected for the ensuing year:

President, H. PUSEY.
Vice President, W. G. HAINES.
Treasurer, A. THOMPSON.
Secretary, W. W. RANDALL.

The *Secretary* read a communication from the London Stereoscopic Co., stating that an exhibition, under their auspices, free to all amateurs, was to be held in London during the next month, and invited members of this club to exhibit. Referred to Executive Committee.

The *Treasurer* read his report which showed the finances of the society to be in a most flourishing condition. The society has been in existence but one year, and has done remarkably well; many interesting and valuable papers have been read, and numerous demonstrations given by practical hands.

New members are constantly being added to the list, and, altogether, the outlook for the future is very bright.

The meeting then adjourned to attend the lantern exhibition which takes place every meeting night, and forms quite a feature of the club.

LOWELL ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

A LANTERN exhibition was held Saturday evening, February 21, at Mechanics' Hall Building. About thirty persons were in attendance. Between seven and eight dozen slides were shown, made by amateurs, two dozen of which were from Mr. Jas. E. Brush and Mr. Randall Spaulding, of the New York Society of Amateur Photographers. The slides of the Lowell members included objects of interest locally, interiors and exteriors, rambles in the historical precincts of Concord, Mass., New Hampshire landscapes, etc. A great deal of interest was aroused among the members of the association, but a few of whom only have so far done anything with transparencies. There is an active interest, however, among the members in the art generally, which promises much for their next winter's hall entertainments.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

A SPECIAL meeting of this Society, devoted to an exhibition of lantern slides, was held at their rooms, 1260 Broadway, on Wednesday evening, March 25th. The combined contribution of the Boston and Lowell Amateur Societies formed the nucleus of the display, to which were added a number of slides by members, together with a set of New Orleans Exposition views, sent by Mr. E. L. Wilson, altogether amounting to about 200.

As the alterations to the society's lantern are not yet complete, they are indebted to Mr. George H. Johnson, of Bridgeport, for the use of his dissolving lanterns, which, under his manipulations, gave very good projections, the dissolving effect being much pleasanter than that produced by a single lantern. Mr. Johnson was assisted by Mr. John A. Delanoy, of this city.

Of course, the views were of every conceivable character, though landscapes seemed to prevail. Among the many excellent slides sent by the Boston Society, "Views of Amherst," "Mink Hill, Bradford, Vt.," "Bridge and Mill, Bradford, Vt.," "The Old Manse," and "On the Rocks at Marblehead," by Mr. E. L. Wilder; and "Country Road, Milford, Vt.," and "Queechy River, Woodstock, Vt.," by Mr. J. H. Thurston, seemed to meet with the most general approval.

"Pawtucket Dam, Lowell," slide by Mr. Hemingway, from negative by Mr. W. P. Atwood; "A General View of Lowell," "Brook at Natural Bridge, Va.," and "Blue Ridge Tunnel" were among the most noticeable of the Lowell Club's contribution.

Of the slides by members, mention should be made of "Old Mill at Peekskill," by Dr. P. H. Mason; "Saw Mill Cove, Housatonic River," also shutter pictures of the steamers "C. H. Northam" and "Stonington," by Mr. A. B. Benjamin; "Elevated Road at One Hundred and Tenth Street," By Mr. Baker; "View in Hartford, Conn.," "On the Bronx," by Mr. Canfield; an "Interior" and "Winter Scene at Stratford," by Mr. Beach; two instantaneous views of steamer

"Ticonderoga," by Mr. Atkinson; and last, but by no means least, steamer "Spain," "On the Androscoggin," "Willey Brook Bridge, N. H.," "Seco Valley, Me.," and "Niagara in Winter," by Mr. J. E. Brush, the last two being perfect gems of their kind.

A positive developed with pyro on an ordinary gelatino-bromide plate was shown by Mr. Inglis, who was present; also a chloride plate printed direct in the sun without development, by Mr. Kuhns.

The New Orleans slides comprised various views about the city, and the exterior and interior of the exhibition buildings, the Mexican department being particularly interesting.

To conclude, Mr. Johnson illustrated the effect of "dissolving" a landscape into statuary, etc., very beautifully.

The audience was large, and contained about twenty-five ladies.

This is the second occasion on which slides from other societies have been shown by means of the arrangement for exchange of slides inaugurated by Mr. Beach, and others are expected to occur. The exchange system is at all events well established, and seems to work very well.

OUR ILLUSTRATION.

The illustration in this number of the Bulletin we have had for some time. It is from one of the first negatives taken by Mr. Henry Beadel, of New Brighton, Staten Island. Mr. Beadel is an enthusiastic amateur photographer, and the work is a credit to him or to anyone.

ENCOURAGING WORDS.

New York, April 1, 1885.

To the Publishers of Anthony's Bulletin;

In noting the improvements which have been made in current Photographic Literature with the advent of this year, there is none, I am sure, which excels the handsome typographical appearance and readableness of your valuable publication, Anthony's Bulletin. And it is a source of satisfaction to me, as I know it must be to many other amateurs, to see the journal conducted by men well known for their practical scientific attainments, and their desire to furnish information to all classes, especially to the swelling ranks of amateurs, which shall be of a useful and practical character. I think too little attention is paid to illustrations in photographic journals in this country. Photography is now so extensively employed in photo-engraving there is no reason why photo journals should not be copiously illustrated. I sincerely trust you will continue to improve as you have in the past, and by so doing win many subscriptions to your really excellent journal.

Yours respectfully,

F. C. Beach.

ASSOCIATION OF OPERATIVE PHOTOGRAPHERS.

392 Bowery,
New York, March 4, 1885.*

In the absence of the *President* and *Vice-President*, Mr. Schaidner was called to the chair.

Minutes of the last meeting read and approved.

Anthony's Bulletin and other journals received with thanks of the Association. Mr. De Lemos and Mr. Wiegand were elected to membership. In the absence of Mr. Duchochois, there was no regular subject for discussion.

Mr. Eddowes—I would like to ask if any of the printers present know the average number of grains of silver absorbed by a sheet of paper.

Mr. Harrison—I don't see how the question can be answered, as every sheet floated on the bath will make it weaker.

Mr. Mildenberger—A sheet of paper will take up just so much silver and no more; it don't matter what strength the bath is.

Mr. Schaidner—There seems to be a great demand for good commercial operators; can any one tell why it is so?

Mr. Fields—I don't see why that can be; there is no trouble in making mercantile work if your bath is in good order and you light your articles right; you have to get good detail, and sometimes you have to give very long exposures; it is entirely different from making portraits.

The *Secretary*—I have to differ from our worthy member, as I think it is sometimes very difficult to make good negatives of mercantile work; for instance, silver-ware, the fine engraving and lines have to show, and, on a polished surface and strong light, it is sometimes very difficult to procure a good negative. We have used powder to dull the articles with, and also used putty for the same purpose; it makes a dull surface by just patting the article with it.

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* This report has been delayed owing to the sickness of Mr. Powers.

W. Eddowes,
Secretary.

A MEMBER—Sometimes an operator has to go out to make a negative of bronze work or silver-ware; there are some firms that will not allow the articles to be photographed to be taken away, and the negatives have to be made in a bad light; men who have worked under the light at portraits will find a great difference.

A MEMBER—It is said that some work requires a long exposure. Suppose you had to photograph anything that moved with the least draught, what would you do in such case?

A MEMBER—I have had to photograph gas fixtures that had ornamental fixings that swung; the street car passing the building would cause them to move, and it was impossible to get more than a blurred mass. In answer to a question, he said he would rather make mercantile work with wet plates.

T. W. POWERS,
Secretary.

The following is a corrected list of officers for the ensuing year:

President, T. W. POWER.
Vice-President, T. C. ROACH.
Secretary, W. EDDOWES.
Financial Secretary, W. F. SMITH.
Treasurer, C. SCHAIDNER.

W. EDDOWES,
Secretary.

Mr. Duchochois' Lectures continued.

OXYGEN, $O^1 = 16$.

Oxygen is an incolorous, testless and inodorous gas. When pure it produces a surexitation which may become dangerous if inhaled for a certain time. In combination with calcium, silicium and aluminium, it forms the principal constituents of the earth's crust—chalk, silicia, aluminia—and is found in nature united to nearly every metal.

Oxygen possesses the most energetic properties. All the elementary bodies, except fluorine, combine with it in one or more proportions, often with apparent evolution of heat or of heat and light, resulting from the rapid atomic motion of the elements seeking each other during their combination; for example: when a parcel of potassium is thrown on water, the oxygen unites with it to form potassium hydrooxide potassa, with emission of heat and light; magnesium heated red hot takes fire in the air and continues to burn with a bright light in evolving white smoke of magnesium oxide; if an iron wire, at the end of which is fixed a small piece of lighted tinder, is placed in a jar of oxygen, the iron at once combines with the oxygen and projects in burning colored sparks of partly fused metal covered with the oxide formed, $Fe_3 O_4$. Most of the metals do not combine spontaneously with dry oxygen, although, with few exceptions, they are slowly oxidized in a moist atmosphere. Such are iron, zinc, copper, lead. When the iron is once rusted, the oxidation progresses rapidly, for the electricity generated from the galvanic cell formed by the metal—the positive element—and the oxide decomposes the water imbibed in the rust, and the oxygen liberated unites with the metal.

Oxygen is essential to combustion and to the support of animal and vegetable lives.

The combustion is a true chemical action, the heat and light resulting from the union of the oxygen of the air with the elements of the combustibles. Thus: the greasy substances are compounds of hydrogen, oxygen and carbon, which, when the substances are heated tend to dissociate and then combine with the oxygen to form carbon dioxide (carbonic acid), $C O_2$, and hydrogen monoxide (water) $H_2 O$, the *eclat* and whiteness of the flame being due to particles of carbon in incandescence.

The phenomenon of combustion is demonstrated by the following experiment. A piece of charcoal, cut in the form of a cone and heated red hot at the apex, is instantly inflamed on being placed in a bottle filled with pure oxygen. When it ceases to burn, the bottle will be found to contain carbon dioxide, which, being much heavier than air, can be poured like water in another vessel, and there exhibits one of its characteristic properties, that of extinguishing a light lowered into it.

The animal heat results also from a semblable oxidation or combustion. The oxygen brought in the lungs is dissolved by a process of endosmose into the blood, displaces the carbon dioxide and, in the phenomena of assimilation, combines with the carbon and hydrogen in evolving heat. In the vegetable respiration, the ascending sap undergoes, through the stoma or breathing pores of the leaves, a modification similar to that of the blood in the capillary vessels, but the carbon of the dioxide which has been absorbed, or formed by the oxygen of the air with the carbon of the plant, is assimilated and the oxygen given out.

Pure oxygen is usually obtained from potassium chlorate which is decomposed by heat in potassium chloride and oxygen.

$$KCl\,O_3 = KCl + O_3$$

$$\text{atomic weights } 123.5 = F\ 74.5 + 48.$$

The chlorate loses consequently all its oxygen, which is equivalent to nearly 39 per 100 of its weight.

The decomposition of the chlorate, which should be finely pulverized and mixed, to one eighth of its weight of manganese dioxide, is effected in a retort provided with a large delivery tube. The action of the manganese dioxide is not explained, for it is found wholly unaltered in the residue, with the potassium chloride.

The oxygen can also be obtained in heating slightly 3 parts of potassium bichromate with 4 parts of sulphuric acid, and washing the gas in water before collecting it by deplacement or in the pneumatic trough:

$$\underset{\text{potassium bichromate}}{K_2\,Cr_2\,O_7} + 4\,\underset{\text{sulphuric acid}}{H_2\,SO_4} = \underset{\text{chromium sulphate}}{Cr_2\,(SO_4)_3} +$$

$$\underset{\text{potassium sulphate}}{K_2\,SO_4} + 4\,\underset{\text{water}}{H_2\,O} + \underset{\text{oxygen}}{O_3}$$

In the reaction chromium trioxide is first formed, and by the after action of sulphuric acid, transformed into sulphate, oxygen being evolved.

$$2\,Cr\,O_3 + 3\,H_2\,SO_4 = Cr_2(SO_4)_3 + 3H_2O + O_3$$

OZONE O_3.

The exalted affinities which oxygen acquires when it has been submitted to the influence of electricity, have been first observed by Van Marum in 1785.

Ozone, or electrified oxygen, as it was formerly called, is soluble in water, and possesses a characteristic odor resembling that of nitrous compounds or of dilute chlorine. It oxidizes mercury, copper and moist silver, which is converted into dioxide: $O_3 + Ag_2 = Ag_2\,O_2 + O$; transforms hydrosulphuric acid and sulphurous acid in sulphuric acid, the sulphides in sulphates, dissociates iodine from potassium iodide, and bleaches the vegetable colors.

The organic substances, paper, cork, caoutchouc, are destroyed by ozone; albumen, gelatine are also rapidly oxidized and decomposed.

Ozone is prepared by adding little by little to mono-hydrated sulphuric acid one eighth its weight of dry barium dioxide C. P. The reaction is very violent when the barium dioxide is hydrated, and in this case the preparation should be made in a flask placed in cold water. Ozone is also obtained by the action of sulphuric acid on potassium bichromate.

Ether in contact with air also transforms oxygen in ozone and retains it (Hardwich); but then the ether is slowly oxidized with formation of acetic acid, carbon dioxide. aldehyde and oxygenated water. Alcohol, in presence of ozone, undergoes a similar decomposition.

Ozone is successfully employed to bleach old engravings. To effect this the engraving is rolled in a large tube, at the bottom of which is suspended a parcel of phosphorus over water. It has not been used in photography.

Starch paper impregnated with potassium iodide is the best test for the detection of ozone, which at once tinges the paper blue.

HYDROGEN MONOXIDE.—WATER
$H_2\,O = 18$.

Water is one of the four substances which were formerly considered as elements. This opinion was admitted without contest on the authority of Aristotle, until Cavendish, in 1781, had demonstrated that water was formed during the combustion of hydrogen. However, its real nature and composition remained unknown when, six years later, Lavoisier in repeating the experiments of Cavendish, and effecting the decomposition of water, ascertained that it was a compound of hydrogen and oxygen in proportion exactly representing the weight of the two gases.

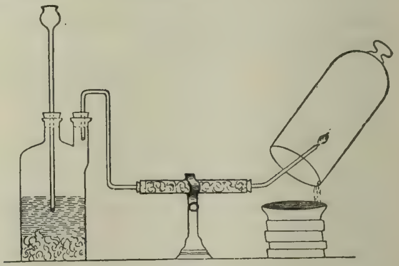

Fig. 6.

The formation of water by the combination of hydrogen with oxygen is illustrated in the most simple manner by a jet of hydrogen burning under a glass bell, fig. 6. The hydrogen from the generator passes through a large tube containing calcium chloride, which absorbs the water carried over with the gas, and escapes at the pointed end of the delivery tube where it is lighted. The steam formed during the combustion condenses on the sides of the bell, where it collects into little globules which trickle down in a cup beneath.

Water is transparent, tasteless, inodorous, volatile at all temperatures, nearly incompressible and indecomposable by heat; it is formed of two volumes of hydrogen united to one volume of oxygen. This composition is demonstrated by the electrolysis of water, fig. 7.

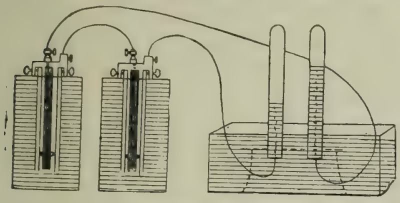

Fig. 7.

The apparatus consists of two platinum wires fixed to the pneumatic trough containing water slightly acidified with sulphuric acid to increase its power of conducting electricity, and of two narrow tubes of equal capacity filled with the acidified water and inverted over the wires. In connecting the wire with a galvanic battery gas bubbles instantly begin to rise in each tube, one of them being filled twice as rapidly as the other. On trial it will be found that the gas most rapidly evolved is pure hydrogen, and the other oxygen partly condensed into ozone which can be detected by the iodized starch paper.

In cooling, the volume of water contracts, the maximum of density being at 39.2 Fahr, and expands as the temperature decreases. The expansion of water in crystallizing is almost irresistible and capable to split even an iron ball tightly closed if exposed full of water to the freezing temperature.

When holding salts in solution water freezes at a lower temperature, and crystallizes first, leaving the salts dissolved in the mother-water, that is to say, in the part not solidified. However the water obtained from melting ice is not exactly pure; it retains a small per centage of salts besides the gases absorbed from the atmosphere, and those formed by the decay of organic compounds.

(*To be continued.*)

I HAVE the June, 1875, number of the BULLETIN, but you can blame no one but yourselves that I don't send it to you. The fact is you have always put so many good things in the BULLETIN, that I have wanted to preserve every number, and I have them all, from the first, bound in good, substantial binding, and I should be loath to take first cost for them on account of their value for reference.

Yours,

C. F.

[*From "The British Journal of Photography."*]

THE HYDROKINONE DEVELOPER.

BY W. T. F. M. INGALL.

WITH reference to the quotation from the *Archiv* on the subject of hydrokinone, and also some later remarks upon intensification, my experience from accumulated experiments differs from that of the writer of the article on hydrokinone as a developer.

In the first place, I do not find pyro ten times faster. I gave a plate a short exposure, cut it in halves, developed one-half with hydrokinone and the other with pyro—Fry's formula—with which I have always succeeded as well as now I contend pyro will let one. With hydrokinone I got a dense negative, and with pyro a faint image that would have been altogether too thin to print from, even under blue cobalt pot glass. The resultant color of the hydrokinone-developed plate—a reddish tinge by reflected light—really adds to the density for printing purposes. For one thing, I hope and believe I shall never have to resort to intensifying again. I feel sure that in dull weather hydrokinone will do for a short exposure that which is out of the power of pyro to accomplish. I wish hydrokinone could get a fair general trial, and should like to hear the results.

I append the formula I now use—

Use only filtered soft, or distilled water, not hard water, or Companies' water (which is with nearly every Company the same thing), unless it be well boiled, left to cool, and filtered. Make the following solutions:

A Saturated solution of carbonate potash.

B	Hydrokinone...........	8 grains.
	Water.................	1 ounce.

This will keep well in filtered soft water, leaving it twenty-four hours to dissolve, then filter.

C	Alloxan................	1 grain.
	Water.................	6 ounces.

I have not yet sufficiently proved it, but I confidently anticipate that B and C may be made up in one. For a 7½ x 5 plate I use—

Soft water.........	4 ounces or thereabouts.
A	2 drachms.
B.................	1 drachm.
Or if under-exposed.	2 drachms.

But I think one will be found in most, if not all, cases sufficient. Keep the developer gently moving, and then I cannot better express the way the negative comes out than in the words of the popular song, "Wait till the clouds roll by." I found to-day by experiment that which I had been led to anticipate, that by pouring off the developer and leaving it off for half a minute, the development is accelerated.

I do not, I again say, find this developer so very slow, although it is some time (say at most ten minutes) before it begins to show action on the film, but once it begins it is steady and very sure, and does not sacrifice the high lights while the deep shadows are being brought out. For example, last Saturday afternoon, I took a portrait of a lady, at about three o'clock, exposure five seconds, with Dallmeyer's 8½ x 6½ triplet (a slow lens) and $\frac{f}{8}$ stop, in a conservatory, S. E. aspect, the sun shining, but the subject shaded by a white sheet with blue pattern on it. As a result I got a good and, as a pyro or iron-development-worker would consider, a decidedly dense negative. I could say much in favor of a developer that has given me much, nay, every satisfaction in its use, and much pleasure in experimenting to work out the formula, but space will not allow. I have since obtained two splendid negatives, the only difference from the above conditions being that the time was earlier, 12.15 to 45 P. M., but the sun was unsuccessfully struggling to disperse the fog, and one was taken with Dallmeyer's AA wide angle (another slow lens); time in both cases, five seconds.

To conclude, I ought perhaps to give the reasons (hypothesis, shall I say?) for adopting the formula I give. I suppose that it is known and admitted that a reducing agent acts much more energetically in presence of chemical reaction, and my own experiments point to that conclusion. I have tried acetic, and oxalic, and uric; but the latter is that from which the one I use is derived, and which is an analogue of oxalic acid. I find it in many ways—not to trouble you with details—much the best. I do not say that I have arrived at perfection, but I believe I have progressed at least one step in advance of pyro or iron development.

I should like to ask two questions before closing: 1st. What is the symbol of hydrokinone? 2nd. Has light any acid reaction on the dry plate? If so, is the conclusion—hence the success of alkaline development—correct?

I have some further experiments in view, the result of which I hope to report in a future article.

THE LATEST STEP IN PHOTOGRAPHY.

THE following article which we reprint from the New York *Tribune*, is well worth reading. The detective camera mentioned in the article is the invention of William Schmid, of Brooklyn, who obtained a patent for it in January, 1883.

Not many days ago attention was called to the fact that instantaneous photography had been called into play as an aid to the official detectives. Some unfortunate Italians suspected of being peculiarly bad were photographed in open court by a detective worthy of Gaboriau who had a small camera concealed about his person. This incident suggested the rapid strides which have been made in this direction by the photographer's art, as it is apparent if the facts were correctly stated, that the plate on which the image was taken could only have been exposed for a second or so in the first place, and that there could have been no focusing in the second place Of course the recent publication of pictures of horses in the act of trotting and athletes flying in mid-air have proved that an image can be fixed on an extremely sensitive plate in the fraction of a second, but the result in all these cases was a silhouette, merely giving the outline of the man or animal without a suggestion of detail. It seemed, therefore, an interesting point to solve, whether the detective story was to be swallowed whole, as in that case a new branch of duty seems to be before the nineteenth century policeman. Among the photographers of this city, Mr. Rockwood is conspicuous for his enthusiastic interest in the scientific novelties of his calling, and it is rare to find him without some new idea buzzing about his active brain. He had just finished photographing a fine specimen of the common or domestic infantile howl the other day, when he was asked whether it were possible to turn the modern policeman into a peripatetic photographer, ready at any instant to take anything on his beat, from a burglar to a glass of lager. "Why certainly," said he, "there is no reason in the world why 'the finest' shouldn't carry a camera as readily as a club, and operate it with more certainty of execution, to say nothing of its greater safety when applied to a law-abiding citizen. It would not be necessary that they should pass an examination by Professor Chandler in chemistry, but with what we might call a 'pistolagraph' they could do better execution than with a revolver, 'hit' the subject and take the plates to the proper person to be developed and printed. A large picture is not necessary for the purposes of identification. In fact, in all photographic work sharpness is more or less sacrificed to size. For instance, the photographic portraits known to us as 'cartes-de-visite' are sharper and more distinct than the larger ones. So, the likeness of a criminal, taken on a plate an inch square, would be unmistakable. Here is a full length figure of only half an inch long, and you see that you could at once recognize the man if you had ever seen him before."

So sharply defined was the little picture that this was readily admitted.

"Now," continued Mr. Rockwood, "I'll tell you how to make a 'pistolagraph'; take the stock of an ordinary pistol. In place of a barrel put on a little half-inch objective or portrait combination lens with a focus of say an inch. In place of the hammer, trigger and spring we fit on a little dark chamber, in which could be arranged an adjustible or fixed focus, the little sensitive plate. A spring worked with a trigger could instantaneously open or shut the lens, while small plate-holders could be carried in the pocket to be inserted as those in the dark chamber were used up. The whole contrivance would occupy less space and be lighter to carry than an ordinary bull-dog pistol. Its uses are apparent. Armed with it a policeman could photograph any number of suspicious characters on his beat whom he did not feel justified in arresting. In fact, he could 'take' them without 'running them in.'"

"Have you heard of the 'Photographic Hat?' It was invented by a Mr. Mendola, of London, for the benefit of those who want to take photographs on the sly in public places. A lens is fitted in the top of the hat, which by a casual observer might be taken for a ventilator. Inside is the camera with arrangements for focusing and changing the plates."

"How about the story of the young man who was photographed at midnight while kissing his sweetheart?"

"I saw that in some of the papers, but should not like to believe more than the kissing part of it. I never photographed a kiss myself. It is, however, barely possible to prepare a plate so sensitive that the small amount of light to be found on a star-lit night would fix an image on it. It would have to be prepared in total darkness, however, and it is next door to impossible to carry on the delicate chemical operations necessary without any light at all on the subject. So sensitive, however, is it now possible to make a plate, that by daylight we can make a picture by exposing the plate just a two-hundredth part of a second. A photographer has made a picture, and it was reported in *The Tribune*, in the twenty-four thousandth part of a second. Don't smile. I cannot tell a lie. I did it myself with my little camera. The object was an electric flash from a Leyden jar."

"I don't want to seem even to doubt your word, but—how do you know you did?"

"Do you see that black disk with the white spot on the edge? Well, that is our tell-tale. We revolve it at a definite speed—say one revolution to a second, and then photograph it by our instantaneous shutter. It is easy then to see how many degrees of the circle the white spot had traveled during the exposure, and by that we can calculate what fraction of a second was occupied in taking the picture. Suppose, for instance, the spot moved one degree; that would clearly show that the time was a three hundred and sixtieth part of a second."

"That ought to do for scientific novelties. Are there any new artistic ideas to be noted?"

"Yes, there is what we call the 'At Home' pictures. People nowadays feel that their rooms are really part of themselves, or that they are part of their rooms, whichever you prefer. So now, instead of coming to the photographer the photographer goes to them. He takes with him a supply of instantaneous plates, poses his subject in his or her own particular arm-chair, and with good taste and judgment in the arrangement of the light and pose he is likely to secure a result far removed from the conventionalities of the 'gallery-' picture. The cost is not great, and I find there is a growing demand for this form of portrait. I am educating my artists to the work, and occasionally go myself."

"Does the growing taste for photography among amateurs hurt the regular business much?"

"I hardly think so. On the contrary, I think we owe much to the amateurs. The number of them is rapidly increasing, and the work of some of the more experienced compares favorably with that of the best professionals. In fact, some of the most charming novelties come from the patient, intelligent, leisurely work of the amateurs. They have an advantage over the professional artist both in the choice of fine subjects and the pursuit of scientific experiments, for their time is their own. Their society here has a large membership and is much respected in England, where their work goes in exchange for that of the European societies. Both here and in England the most aggressive experimentalists are scientific amateurs."

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[*From N. Y. Mail & Express.*]

AMATEUR PHOTOGRAPHY.

The most beautiful photographs taken in this city are by a young lady. She is the daughter of a prominent banker, and her photographs only circulate privately; but they excite admiration wherever they are seen. She belongs to a knot of young women who are studying art, and for their own benefit they pose for one another, and for such a collection of artistic studies there is many an artist that would give a pretty penny. These are, however, carefully guarded from sacrilegious eyes. The peculiarity of these photographs is in the use made of shadows and the softness of the lines. The professional photographer gets a glare of light and brings everything to a sharp focus. This young woman keeps her subjects in shadow and her instrument just a little out of focus.

Another accomplished photographer is a well-known woman of fashion, who has a superb collection of views taken by herself. Mr. Frederick Constable, of the firm of Arnold & Constable, has been experimenting in photography for many years. Last year he took 500 negatives in and about New York. This fact was formerly the despair of his wife, who could trace him by the blackness of nitrate of silver and the destruction to his shirts. Since the modern discoveries in photography, which render it, as they say in the advertisements, a light, clean, easy employment, his wife has become as much interested in photography as he is, and accompanies him in his photographic prowls. Mr. Joseph Drexel is also an enthusiastic photographer, and among the Wall street men may be numbered also Mr. John A. Cisco and Mr. R. A. C. Smith, the president of the Havana Gaslight Company; Mr. Low, of Low, Harriman & Co.; Mr. Parsell, of the Eighth Avenue National Bank; President Barnard, of Columbia College; one of the younger Harpers, Mr. Frederick C. Beach, of the *Scientific American*; Mr. J. Wells Champney, the artist; Mr. Louis Tiffany, Mr. Charles Barnard, are all prominent amateurs. "Ted" Hewitt, as he is called, the son of Mr. Abram S. Hewitt, and grandson of Peter Cooper, a boy of 14, is a fine photographer, and brought home from a recent tour in Europe a collection of beautiful views he took on the wing. Arthur Doremus, the youngest son of Dr. Doremus, is also an enthusiastic photographer.

Many amateurs keep photographic diaries, as it were. All the family doings are chronicled, from the last baby to the last new gown, the latest arrangement of a room, a new vase or piece of furniture. With a bit of magnesium wire the busy man through the day amuses himself in the evening with family photography—the wire furnishes him all the light he needs. Very few of the crazes which are constantly taking possession of city people have as much to commend them as the latest photographic craze.

Bibliography.

THE AMATEUR'S NOTE BOOK OF PHOTOGRAPHY.

THIS is a neat little memorandum book, suited to the needs of amateur photographers, for keeping a record of the exposure of plates and other items. It is divided into columns for the record of the following points: Number of slide used; the negatives' number; date; subject; time of exposure in seconds; lens; stop; focus; time of day; plate makers' name; and remarks. One very useful addition is about three hundred gummed tickets of numbers in progressive order, which are perforated so that they can be easily torn out and attached to the negatives, as they are finished. A system of this character is found to be both useful and interesting, for the keeping of the results of photographic work; and we have not yet seen anything as simple and cheap as this little note book.

A COMPLETE AND COMPREHENSIVE TREATISE ON THE ART OF CRAYON PORTRAITURE IN BLACK AND WHITE, BY J. B. CROCKER.

This useful little manual is well suited to those who desire to make crayon portraits. In a series of terse articles, it treats of the various materials needed and the best qualities suited to the work. Details as to the background to be used, the drapery, light, etc., are carefully given. Then follow various suggestions about special parts of the face, as nose, eyes, etc., together with some ideas on landscape drawing and a chapter on charcoal work. Altogether, we can commend this treatise to our readers as practical and very much to the point.

IN our report of the Photographic Merchants' Board of Trade meeting in the last issue of the BULLETIN, on page 182, W. P. TUCKER is said to take the chair. This should read Mr. DAVID TUCKER, of DAVID TUCKER & Co. We hope Mr. Tucker will forgive us this time for the oversight.

What Our Friends Would Like to Know.

Porcelain Transparencies.—"I am happy to write you that I have succeeded in entirely clearing the margin of the porcelain transparencies, by using a weak solution of potassium cyanide (5 to 10 per cent.), slightly colored with iodine solution."

C. S. BRADFORD, JR.

Pyro. Stains.—"Having received so many good things from the photographic journals, and having tried a suggestion from my wife, I thought it should be published. Those using pyro for developing gelatine negatives, have nearly as much trouble with stained hands as in using the old silver-bath. Muriatic acid, nitric acid, and oxalic acid are neither very pleasant nor safe to use. Citric acid is better and safe, it is true, but is also more expensive. *Tartaric acid* is safe, cheap and does its work thoroughly. And what is still better, it will take out the yellow color from a negative better than any of the others, and does not seem to soften the film.

E. DECKER."

DEAR EDITOR,—In your last edition an inquiry was made relative to a yellow stain which appeared after developing with Cooper's last formula, and intensifying with mercury and ammonia.

This trouble (in the answer) was attributed to imperfect elimination of the pyro, and is no doubt true of many similar stains, but I am inclined to believe that the cause of that now under consideration was the presence of hypo in the film.

At any rate our friend F. can readily determine this for himself. If pyro was the cause the discoloration will yield even now to the remedy prescribed in the answer, but if hypo was the culprit I will feel deeply indebted to F, or anybody else, for a remedy. I know of none.

Yours, etc.,

D. COOPER.

Q.—C. H. writes—"One of our printing baths froze solid a month or so ago, and, after thawing it out, it would not work. It was boiled down nearly to dryness, then filled up to the original bulk, and tested 57 grains; still it would not work. A few drops of permanganate of potash were then run in, and it was set in the sun for several days. It was then filtered and we used it. All this time the black spots you see upon the paper sent made their appearance. The bath was found to be alkaline, and a few drops of C. P. nitric acid were added, and then brought down so that red litmus turned slightly blue. It was tried again with the result as shown in the paper sent, where you will find a number of small black spots. The paper has been silvered and fumed. Now please tell me the cause and remedy for this."

A.—We do not see the use of boiling down the bath. Simply freezing it should not have made any difference in its working qualities after thawing it out again. In regard to the spots on the paper we fail to find them even under a pocket lens. It would appear that you had sent us the wrong piece of paper. We have made a print on it, and it looks very good. Nevertheless, we would venture one explanation in regard to spots on albumen paper. From a number of examples we have seen they are probably due to pyro. dust. This pyro. is so light that it is exceedingly difficult to keep it out of the air; and in handling it in a dry state great care should be taken that *no albumen paper is in the room where it is done. We would lay special stress upon this point.*

Views Caught with the Drop Shutter.

Messrs. GURLEY and HARRIS, Utica, New York, have bought the A. B. Gardner Gallery of that city, and will run it in connection with their own. They are making large improvements in both studios, and will carry on the business on a larger scale than ever. Mr. Gardner will devote his time to his real estate business.

Mr. E. H. WILLIAMSON, formerly an operator for Mr. Gardner, at Utica, has bought the W. P. Bacon Gallery at Rome, New York, and moved to his new quarters on April 5th.

An international photographic exhibition is to be held in the Crystal Palace, of Oporto, in the month of September next. Programs and other information can be obtained from M. A. Maltheira and Eduardo Jose Alves, Crystal

Palace, Oporto, Portugal. The exhibition is under the patronage of the king of Portugal.

The Chicago Amateur Photographic Club has secured rooms for permanent quarters in the Art Institute Building, southwest corner of Van Buren Street and Michigan Avenue.

The accommodations include Dark-room, Gallery for Portrait and other work and all conveniences, changing plates, etc., which will be accessible at all times to members and visiting amateurs.

Mr. Geo. Heyn, of Omaha, has gone into the photographic stock business, and his good business qualities will no doubt secure him many patrons.

A number of the photographers of Fort Wayne, Indiana, called a meeting on March 25th, to form a society to be called the "Photographic Association of Fort Wayne," having in view the mutual benefit of all members of the Society, and the general advancement of the Art of Photography.

The names of some of the leading photographers of Fort Wayne are attached to the notice of the meeting.

Mr. Emerson Osborn has bought the Singhi Gallery at Binghampton, N. Y., and has made great improvements in the studio.

Mr. Osborn has been operator for Geo. N. Cobb, of Binghampton, for the past ten years, and his reputation as a photographer and a gentleman is well known in the vicinity. We wish him success.

Mr. Singhi has gone south, and will show the people there what good work is.

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*

ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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TESTIMONY ON PHOTOGRAPHY IN COLORS.

We have received many letters from gentlemen interested in photography in colors, and they show that quite a number of minds have given considerable thought to the subject. Prof. W. H. Pickering of the Massachusetts Institute of Technology at Boston, says that he is a skeptic as to the possible solution of the problem. In a letter he says:

"I do not believe that the silver salts or any other salts can ever be made to imitate all the colors we see in Nature. I think we shall have to resort to dyes or pigments; and in that case it ceases to be a photographic and becomes a lithographic process. It seems to me that is where we must look for advance; and I should be very much interested in any process which would cheapen or improve the modern chromo-lithograph."

"Again, I do not see what use a colored negative would be unless one could transfer the colors permanently in some way to paper."

We are entirely in accord with Prof. Pickering in his ideas upon metallic salts, and expect nothing from these but a monochrome. In regard to the colored negative, if this is obtained and transparent, it is but a short step to colored positives.

Mr. W. B. Allison of the North Staffordshire Amateur Photographic Society, writes in much the same strain as Prof. Pickering. In his letter to us he says:

"Personally I am of the opinion that a substance other than a salt of silver must be found, capable of receiving an image in the camera and retaining it, some other way than in monochrome. Is any attention devoted to the *vegetable kingdom* in this respect?"

Here appears to us the key to the solution of the problem, a set of researches upon the effect of light upon vegetable substances. We believe this to be a field of labor which will afford rich harvests to many workers in the coming years. Nature is seldom colored with hues derived from the mineral kingdom, while the vegetable cell reproduces readily and harmoniously every vibration of the solar spectrum.

Mr. H. P. Robinson writes: "I have given up 'Photography in Colors' as hopeless long ago," and further remarks "there can be very little relation between a process for producing a painting in colors in *true gradation of light and shade,* and a process by which the colors of the painting should be *produced in colors* in a photograph." He says that authors are too careless in the use of the terms photography *in* colors in contradistinction to photography *of* colors.

Mr. Robinson's remarks about the production of the true light and shade of a painting are not in accord with those of DR. H. W. VOGEL, who writes:

"I believe the first step in this direction is made by my discovery of the principle to make silver bromide sensitive to all colors of the spectrum. The second step will not be very far behind."

We are very much pleased to notice some observations in photography in colors made by an American scientist, whose beautiful observations upon the velocity of light have obtained for him a world-wide renown; we refer to PROF. ALBERT A. MICHELSON of the Case School of Applied Science, at Cleveland, Ohio. He writes:

"Having had occasion to convert some films of silver on glass into silver iodide I was much struck by the beauty and regularity of the 'colors of thin films' thus produced.

"It seems to me that an appropriate treatment of these *may* lead to a solution of the problem. Suppose, for instance, that a film of silver iodide were produced which gave by reflection the 'red of the *second* order.' Let this be exposed to the solar spectrum. If now a medium can be found which diminishes the thickness or the index of refraction of the film to an extent proportioned to the intensity of the active action of the light; then the effective thickness of the film would diminish regularly from the red to the violet. This would produce the succession of colors, red, yellow, green, blue, violet, which to the eye have very nearly the same appearance as the true spectrum colors. I am fully aware of the difficulties to be encountered, even if the medium possessing the required properties should be found; and appreciate the fact that 'natural' colors would produce very different effects from those produced by spectrum colors."

We have thus called attention to the ideas of a number of minds who have thought upon this most interesting branch of photography. We expect to be able to place before our readers some interesting papers on the subject of photography in natural colors, which are promised to us from various authorities in the photographic world. In the meantime, if any of our readers notice anything in literature or make any personal observations that tend to throw any light upon the subject, we shall be very glad to hear from them. Very trifling observations often lead to important discoveries. The observation of Faraday that a magnet would produce electricity when moved near a coil of wire, has developed into the modern applications of the force, which appears destined to revolutionize modern engineering. Some equally insignificant fact carefully noted and patiently developed will give us photography in natural colors.

PAST, PRESENT AND FUTURE OF PHOTOGRAPHY IN NATURAL COLORS.

BY A. A. CAMPBELL SWINTON.
Newcastle-on-Tyne, England.
(*Continued.*)

Although Becquerel made many attempts to fix the colored photographs that he obtained, he never succeeded. Hyposulphite of soda, ammonia, and other substances capable of dissolving silver chloride, were of no use, as they were found to destroy immediately all traces of the image, leaving, however, in some cases, an extremely faint picture in colors complementary to those which had previously existed. This, however, also vanished as soon as the plate was dry.

After Becquerel, the next observer of note who attacked the problem was Nièpce de St. Victor. He employed silver plates which he chlorinated by immersion in a solution of iron and copper chloride, and then heated them strongly. By this means he obtained plates of great sensitiveness, with which he succeeded in taking camera pictures in sunlight with an exposure of only fifteen seconds. He took successful colored photographs of flowers, painted windows, dolls dressed in colored clothes, and peacocks' feathers, in which, not only did the colors appear correctly, but the gold and silver also retained their metalic luster. Examples of his work were exhibited in a subdued light at the Paris International Exhibition of 1867, and in London at the Loan Exhibition of Scientific Apparatus. He contributed full accounts of his discoveries to the Paris Academy between the years 1857 and 1867.

Other workers have been Poitevin, Wharton Simpson and St. Florient. Poitevin employed violet silver subchloride on paper; Simpson, silver chloride suspended in a film of collodion or gelatine; and St. Florient succeeded in partially fixing the colors produced on silver subchloride by a bath of ammonia and alcohol. The details of the investigations of these experimentalists are too lengthy to describe on the present occasion, but may be found in full in a book entitled "Die Heliochromie," recently published in German by Dr. Liesegang of Düsseldorf, in which book are also accounts of the experiments of Becquerel and Nièpce. This book is, I believe, the only one that exists upon the subject, and the fact of its being written in German prevents it being of much use to those who are not conversant with the language.

The visible coloration produced in the manner above described has been generally attributed to the same cause as in the case of thin plates; but, according to Captain Abney and other authorities, this is not the case, and the colors are probably due to different stages of oxidation of the silver salt. When this is taken into consideration, the difficulty of fixing the colors and preventing the further action of light on the silver becomes more apparent.

In an ordinary photograph the silver salt is reduced by light to the metallic state; fixation is accomplished by immersion in solutions of sodium hyposulphite or potassium cyanide, which dissolve away the unaltered part of the silver without affecting the image. With colored photographs, on the other hand, the case is entirely different. The whole of the silver salt appears to be acted upon more or less, and upon the extent of the action depends the color produced. The silver is in no case reduced to a metalic state, and any chemical capable of dissolving the salt is consequently found to remove all traces of color.

It is thus clear that fixing, in the sense of dissolving out all the unaltered silver, cannot be accomplished, for though all the salt is more or less acted upon, none is metallic, and all is soluble.

If, however, the theory be true that the colors are due simply to different degrees of oxidation, it may, perhaps, be found possible to fix the image by protecting the surface of the plate from the access of oxygen, which would render further oxidation impossible. At the same time, however, it will be necessary to guard against the evolution of chlorine, which would reduce the silver subchloride to a metallic state.

Although this may sound easy in theory, in practice it is a difficult problem, and, moreover, the results are not what we would expect. A layer of paraffine is believed to be quite impermeable to both oxygen and chlorine; but a layer of paraffine on the surface of a chlorinated plate does not appear to have the slightest effect in arresting or modifying the formation of colors or in procuring their subsequent permanency. With a silver plate prepared according to Becquerel's electrolytic method, the presence or absence of a layer of paraffine produces very little appreciable difference, and hence the conclusion is forced upon us that either the colors are not due to oxidation, or that there is sufficient oxygen present in the film without any recourse to the outer air. The latter is very probably the correct explanation, for without doubt the electric current, acting upon the acidulated water, liberates oxygen as well as chlorine, and consequently the film does not consist exclusively of silver and chlorine; but there is also probably oxygen present as well. Moreover, though paraffine may be practically impermeable to oxygen, still it may actually be slightly permeable, and with so delicate a substance as silver subchloride, a very minute amount of oxygen may be able to have great effect.

It is greatly to be hoped that some process by which the beautiful colors produced on silver subchloride may be rendered permanent will be discovered, but it cannot be denied that the problem is of considerably greater difficulty than was the case in the instance of ordinary monochrome photographs. While in the latter the unaltered silver has only to be dissolved away, in the former the image consists of silver in a very unstable state of transition from one form to another, and a means of causing it to remain permanently in this transitional state is consequently very difficult to discover.

However, who can doubt that a fixing medium will some day be discovered, when it is remembered that in the case of uncolored photography, no less than seventeen years elapsed before permanency was obtained by the discovery of the properties of hyposulphite of soda?

It must not, however, be imagined that a fixing medium is the only thing that is required to render colored photography feasible, although when the one is found the rest will be sure soon to follow.

Great as has been the progress made, much yet is left to be accomplished before practical success can be assured. Even in the bright sunshine, and the most sensitive plates at his command, Nièpce found fifteen seconds' exposure necessary, while, with a diffused light, the exposure was measured by minutes. This, in our modern days of instantaneous photography, would never do, and before photography in colors can become of any practical use, plates of much greater sensitiveness than those employed by Nièpce must undoubtedly be produced. To those, however, who have watched the progress of photography from the days of the Talbottype and the Daguerreotype until now, this will nowise appear an insuperable obstacle, for in those early days exposures of one to two hours were not uncommon.

At all events, photographs in natural colors have been produced, and partial fixation has also been attained. The rest is sure to follow; it can only be a question of time.

I fear that this paper is by no means worthy of its theme, but it is not possible to fully treat of so extensive a subject as that of colored photography in a short space of time. Information as to what has been discovered is, moreover, in this country, extremely scant, and nearly all the literature pertaining to the subject that can be obtained is of foreign origin.

If I have been successful in arousing only a little interest in the great problem, I am fully satisfied; for interest will perhaps lead to investigation, and the latter to fresh discoveries.

The progress toward the attainment of photography in natural colors has been undoubtedly slow, it has been none the less sure; and though much still remains to be worked out, a basis on which to work has, at all events, been discovered.

Seebeck, Herschel, Hunt, Becquerel, Nièpce, Poitevin, Simpson, St. Florient have done their share toward the solution of the problem, and the names of those who succeed in supplementing their labors will go down to posterity with like glorious associations.

FILM NEGATIVES.

We have recently received some prints from the Eastman Dry Plate and Film Co., which are from these new substitutes for dry plates. They are certainly beautiful productions; and if they can be readily produced as good as those from which the prints before us were made, there is nothing more to be desired. We shall try this new film tissue as soon as we get a chance and let our readers know some of our results. A substitute for glass is indeed a desideratum, and if the manipulations are not too complicated, will most certainly be appreciated by photographers.

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An amateur, with any practical knowledge of photography, cannot do better than lay down a sound knowledge of the whole of optical science, and of such branches of chemistry as touch on optical science. A whole kingdom of science of most fascinating interest lies before him; and he will pass from photography and its camera to the microscope, the polariscope, spectroscope, telescope, to return again to "his first love," and our immediate subject, with a new zest, born of larger knowledge.—*The Am. Photographer.*

THE WOODBURY TESTIMONIAL.

We have recently received the following appeal, which we gladly publish and commend to our generous subscribers. Walter B. Woodbury may be said to be the father of photo-mechanical printing, for it was the success of his first efforts that led to the numerous inventions that have culminated in the beautiful photo-gravure process of Goupil of Paris. We have no doubt that the appeal for help will receive a liberal response:

Dear Sir:

It having come to the knowledge of some of Mr. Woodbury's friends that he is in ill health and in need of pecuniary assistance, the gentlemen whose names are attached to this letter have formed a committee, in order to appeal to the photographic and literary world for subscriptions.

The services rendered to photography by Mr. Woodbury are so well known to all interested in the art as to need no comment. He has been awarded numerous medals for his inventions, which are in practical application in every capital of Europe.

The committee believe that a large number of persons will be glad to show their appreciation of his labors and sympathy for his present position by contributing to the fund.

It is hoped that such a sum of money will be raised as will remove his present embarrassments, and lighten his anxieties for the future. With ease of mind and improved health, he expects to be able to perfect and extend the improvements he has introduced into photo-mechanical printing, and reap some direct reward from the same.

Subscriptions will be gladly received by the gentlemen of the committee, or may be sent direct to Your obedient servant,

W. S. BIRD, *Treasurer*,
74 New Oxford street,
London, W. C.

Woodbury Fund Committee.

Chairman, Jas. Glaisher, Esq., F. R. S., F. R. A. S., President of the Photographic Society of Great Britain.

Committee: The Right Hon. The Lord Mayor of London; Captain W. De W. Abney, F. R. S., &c., Willeslie House, Wetherby Road, S. W.; Francis Bedford, Esq., 326 Camden Road, N.; J. Thomson, Esq., F. R. G. S., 70A Grosvenor street, W.; William England, Esq., 7 St. James Square, W.; J. W. Swan, Esq., F. C. S., Lauriston, Bromley, Kent; H. P. Robinson, Esq., Tunbridge Wells; T. S. Davis, Esq., F. C. S., 199 South Lambeth Road, S. W.; John Stuart, Esq., 112 New Bond street; T. Bolas, Esq., F. C. S., 8 Grove Terrace, Chiswick; E. Marston, Esq., 188 Fleet street.

Hon. Secretary, E. Bent, Manor Road, South Norwood, S. E.

Treasurer, W. S. Bird, Esq., 74 New Oxford street, W. C.

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A NEW DRY PLATE.

We have recently had our attention called to a new brand of dry plates, and having tried them, will give our readers some of our ideas about them. When we took hold of the plates we experienced a feeling that has often occurred to us before; and this was one of distrust. We knew of a good plate, and felt pretty well satisfied. We had tried all the highly recommended brands of plates and had often dropped them with disgust. Consequently, when we took hold of the new plate, we thought to have the same experience. These new plates are called the "Stanley," and are really quite remarkable in the various qualities that go to make up a good dry plate. We have found them to be highly sensitive, quite uniform in character, and very easy and pleasant to develope, coming up gradually and clearly with the soda developer. We also used the potash-soda developer with equal success, except a little more rapid development. In regard to sensitiveness we would remark that we recently took out some of these new plates and exposed them with some of a very highly recommended brand, and which we had hitherto found to be the best known to us for quick and good work. The time of day was about 4 o'clock in the afternoon, the sky was of a leaden hue, and rain fell shortly after we had finished the exposures. Using the same subjects (one a view, the other a group), the same lens, the same exposure, and developing with fresh mixtures of the same solutions, we obtained with the new plates two good negatives; and with the others, two very much under-exposed ones, that have the appearance of excellent ambrotypes. Now, as the plates are at present made they are uncommonly good, and we have seen a number of negatives by individuals of the most diverse peculiarities in their manner of working, yet these negatives all appear good.

If the manufacturers of these plates will keep up their standard of quality, we can assure them of the gratitude of an army of amateur and professional photographers. Hitherto, after a plate has obtained a certain amount of celebrity, somehow or other, the manufacturers get careless, and we have dirty plates, poor glass, thin and uneven films, and last, but not least, a deficiency of haloid silver salt upon the plate surface. In every brand of plates we have used a majority of these faults have been found; and we have often been thoroughly discouraged at the results of many a day's journey, where the time snatched from business with the hope of indulging in the pleasures of photography, has terminated in disappointment through some fault in the plates.

In all the samples of these new plates which we have seen (and these have been taken from a great number of boxes), we have not seen a single one of the faults we have mentioned above, and the brilliancy of the negatives is truly remarkable. Those made by the tyros in photography compare wonderfully well with those obtained by veterans in the art. We shall use these plates as long as their quality is as good as at present. If the manufacturers become careless we shall look for something better.

POSTAL PHOTOGRAPHIC CLUB.

At a meeting for the organization of the Postal Photographic Club, held April 1, 1885, at 361 Broadway, the following gentlemen were elected as the committee: Chas. W. Canfield, H. V. Parsell, Jos. S. Rich, Randall Spaulding, Fredk. C. Beach.

At a subsequent meeting of the committee the following officers were chosen for the year:

President, Chas. W. Canfield; *Sec. and Treas*, Jos. S. Rich.

The rules, as presented, were then adopted.

Fredk. C. Beach,
Sec. pro tem.

PROSPECTUS.

This club has been organized to afford an opportunity to amateurs in all parts of the country of communicating with each other. The general scheme consists in having each member contribute six or more specimens of work; these specimens to be arranged in albums by the Secretary, and to be sent from one member to the other (each member paying carriage to the next on list). A notebook will accompany each album, and in this notebook each member will write criticisms on the work presented, and vote on a prize print. The management of the club is in the hands of a committee of five members. The expenses are to be met by an admission fee of 50 cents and annual dues of $2.

Ladies are eligible to membership, and this club offers them an opportunity for correspondence in photographic work.

All interested are requested to communicate with the *Secretary*, Mr. Jos. S. Rich, 50 West Thirty-eighth street, New York, who will send a copy of the rules and furnish any information desired.

Chas. W. Canfield, *Pres.*
Jos. S. Rich, *Sec. and Treas.*
Fredk. C. Beach,
H. V. Parsell,
Randall Spaulding,
Committee.

We commend the above club to those of our amateur subscribers who are situated at a distance from New York City. The gentlemen into whose hands the management has fallen are tried members of the energetic New York Society of Amateurs, and will no doubt make the project a success. The *Secretary* would like to have intending members send in prints; the first album will begin its travels on April 29th. The membership of the Club will probably be 25 before the end of the month, and with thirty names on the list all expenses for the first year can be met.

INTENSIFICATION.

The following, taken from a short article by A. K. Dresser, in the *Amateur Photographer*, will interest some of our subscribers who are troubled with thin negatives. It is best to avoid the production of such negatives; but having them, try the following: which appears to us to be a rational method:

"There are many intensifiers sold ready made-up, but my experience is that none of them work so well as the one I now am using, which is—take a saturated solution of bichloride of mercury (corrosive sublimate, a most deadly poison), then take one part of this saturated solution, and add six or eight parts of water. Soak the plate in this until it becomes quite white. Next put the negative into a saturated solution of sulphite of soda. If you do not want a very dense negative, dilute the sulphite of soda with one half of water. It is preferable to dilute the sulphite of soda at the commencement of the operation, as one rarely has a negative so very thin as to require a saturated solution.

The results of this method of intensifying are, I think, quite permanent, and you need only put the negatives under the tap for a few seconds between the mercury bath and the soda bath, and if washed for half-an-hour after both baths, it is washed sufficiently. I now do all my intensifying with this formula, and none of my negatives have, as yet, faded. In any case, I advise my brother and sister amateurs, if they value a negative, not to employ bichloride of mercury and hypo, or bichloride of mercury and ammonia. Negatives treated by the latter *may* keep if well washed; by the former, however well washed, never. I recommend all to try bichloride of mercury and saturated solution of sodium sulphite, the sulphite diluted nearly one-half with water.

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SATURATED SOLUTIONS.

In a paper in the *Philosophical Magazine* Mr. W. W. J. Nicol, gives some of the results of his experiments upon salts in solution. When two salts dissolve simultaneously, the experiments tend to show that each salt dissolves independently of the other, and also that each salt increases the solubility of the other.

These facts may be found useful in mixing solutions for developers and other purposes.

DETERMINATION OF INTERVALS OF EXPOSURE.

BY L. H. LAUDY, PH.D.

School of Mines, Columbia College.

Many mothods have been suggested to determine the intervals of exposure in making photographs. Among the first was the use of a pendulum, which was so arranged that its motion could be arrested at any part of its oscillation. The movement of a hand over a dial at a uniform rate of speed of which a photograph is taken while in motion has been used. This is attended with mechanical difficulties in construction, and requires that a negative be taken each time for every determination, which involves time and expense, and can only be used under favorable circumstances, as the hand moving over the dial must be exposed to sunlight.

The principal reason for this research was to determine with precision the time of exposure, and in a way that would be simple and not require the intervals to be photographed, to make the apparatus less expensive than most of the costly and elaborate designs to be found in a physical laboratory.

The use of tuning-forks as a measure of small intervals, has been accepted for a number of years by physicists, on account of their pendular vibrations being so regular, so accurate and easily adjusted to any one period of vibration, that they furnish an admirable means of measuring fractions of a second, and are considered as reliable as the Chronograph or Chronoscope, and are to be preferred to either on account of symplicity and cost. At the same time yielding a method by which the curves or vibrations of the fork are made to produce upon a smoked surface a written account which can be easily translated.

The undulations of these curves correspond to the vibrations of the fork,

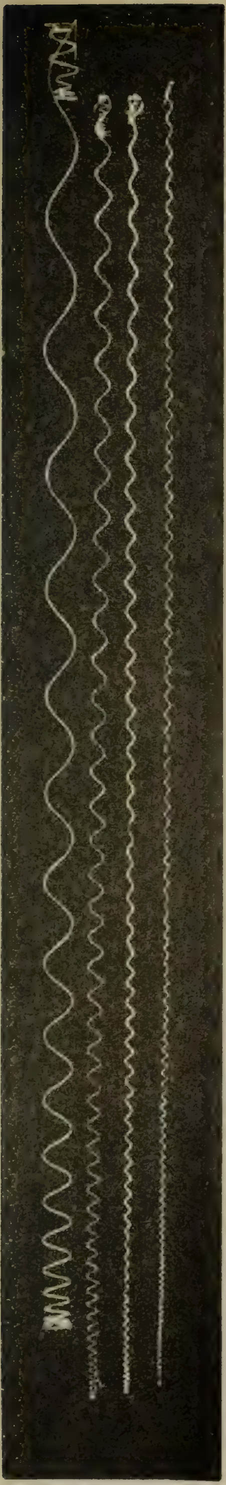

Fig. 3.

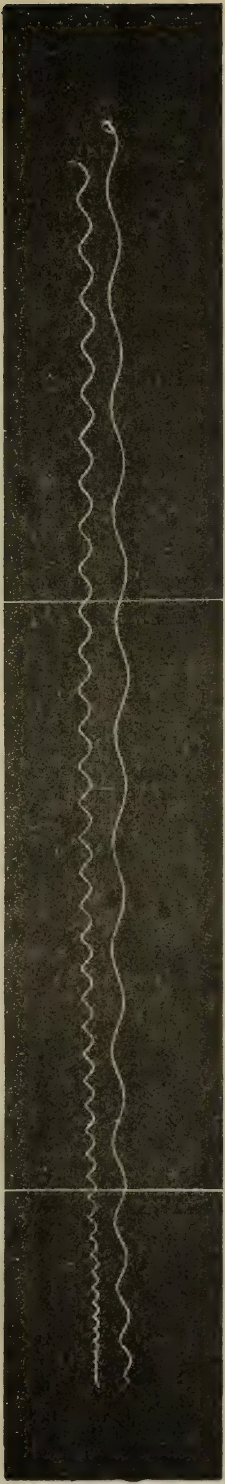

Fig. 4.

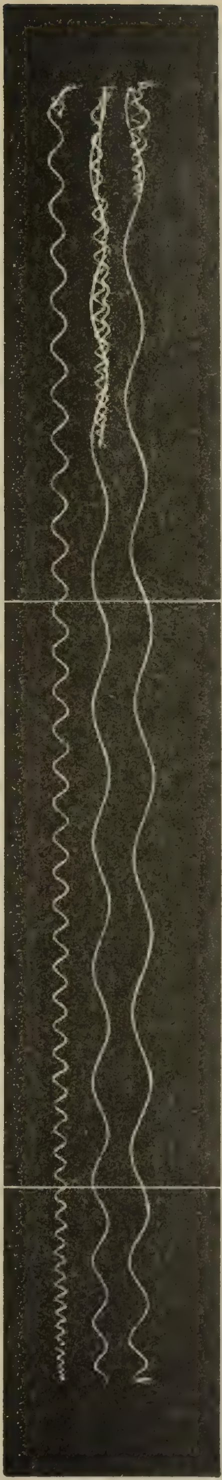

Fig. 5.

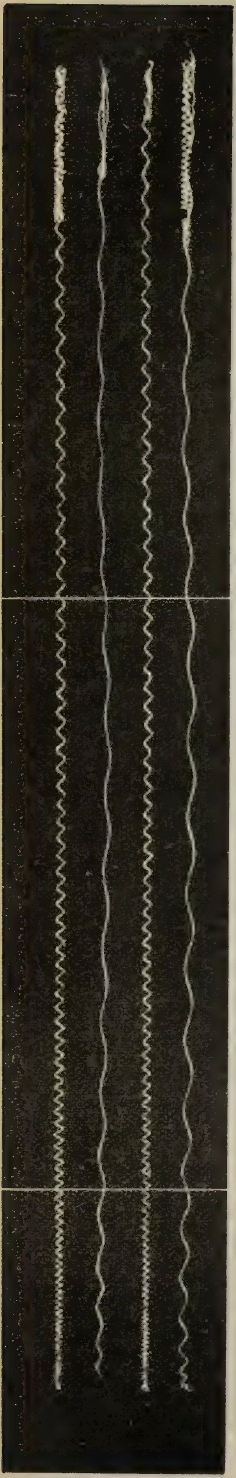

Fig. 6.

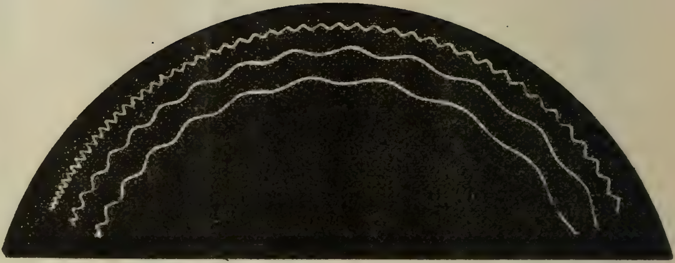

Fig. 7.

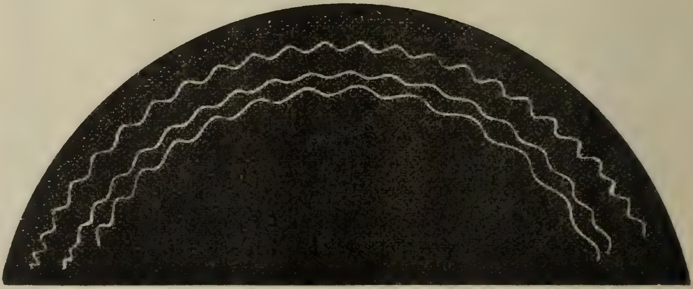

Fig. 8.

and, consequently, to equal times, while the distance of any undulation from the beginning of the curve is proportional to the distance travelled by the moving body. This method is one of registration, which means the obtaining of written lines or curves traced upon a smoked surface by means of tuning-forks, which exhibit the position and movement of a body at any interval of time. It is called a graphic method. The apparatus is perfectly adapted for the measuring and recording of such variations as are relatively slow, or it is capable of translating to us those rapid movements of which we estimate the durations not in seconds but in fractions of a second, producing a curve expressive of any rapid movements.

The value of this apparatus depends entirely upon knowing the actual number of vibrations of a tuning-fork in a given time.

It is, therefore, of fundamental importance to be certain that the forks are such as give a full, clear, fundamental tone.

I have selected those producing a musical note, C^3, E, G, C^4, known as a common chord in music, in preference to those making 100, 200, 300 vibrations, for the reason that they can be readily purchased if desired, and can, at any time, be tested with other instruments yielding the same note, and in this way the pitch can be determined and the rate known.

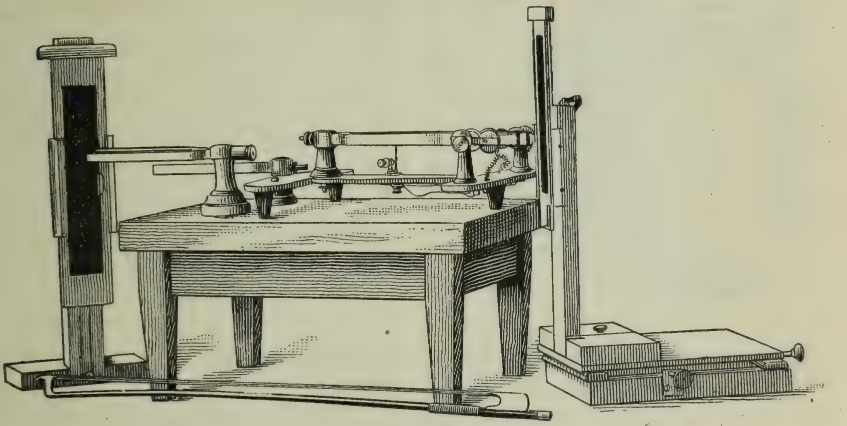

FIG. 1.

The size of forks used are as follows:

	100	vibrations,	10	inches.
C_3,	256	"	$6\frac{3}{4}$	"
E,	320	"	$6\frac{1}{4}$	"
G,	384	"	$5\frac{1}{2}$	
C_4,	512	"	$4\frac{3}{4}$	"

I will proceed to explain the principle of construction, and how it is applied to determine short intervals.

The apparatus that Fig. 1, illustrates, consists of a small, rigid table, upon which are mounted the different forks to be used.

The large one, making 100 vibrations per second, is arranged to vibrate by means of magnets, which pull by their attractions on the prongs of the fork, breaking contact by so doing; a small commutator on the side sends the current again through the magnets, and in this way the vibration and amplitude are kept in permanent motion so long as the magnets are excited by electricity.

This permits of making a large number of determinations without stopping to vibrate the forks by bowing.

The other forks, making 256, 320,

384, 512 vibrations, are mounted on a rigid post, and are vibrated by drawing a cello bow across the prongs of the fork. The bow is rubbed with rosin, which enables the hairs to grip the fork; the resistance of the fork soon becomes too strong and the prong starts back, and by drawing the bow across the fork it will start into a state of intense vibration, which, in large forks, will remain long enough to make several determinations.

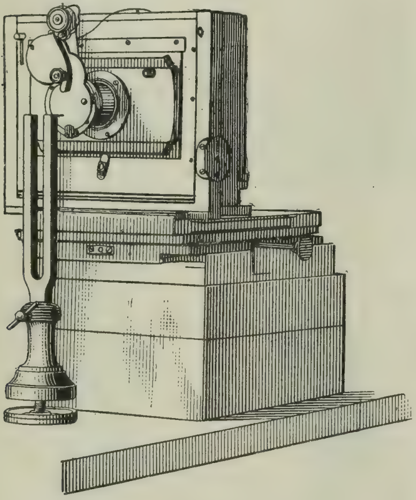

FIG. 2.

Figure 2 shows the arrangement of forks for determining bodies moving in part or whole of a circle. At this point it may be well to state that, when a vibration is spoken of, it means a complete one to and fro, and not as the French use it, meaning only in one direction, making the vibrations only the halves of ours, which would double the above figures.

The waves are produced by a moving body, upon which is attached a smoked surface (either glass, paper, or mica, can be used), and this is brought in contact with a delicate strip of metal or bristle, called a style, which is attached to one prong of the fork by means of a little wax.

The fork is then made to vibrate by bowing, and when the smoked surface is brought into contact with the style of the fork, a body moving in any direction will have a wave tracing upon the smoked surface.

The length of the waves depend upon the velocity of the body and the rate of the fork. The slower the body moves the greater the number of waves.

The amplitude depending upon the size and rate of the fork, the higher the rate of vibration the less amplitude.

The intervals of exposures are determined by taking the sum of the two openings. That is, carefully measure the diameter of the lens and the opening in the shutter; adding these together gives us the sum of the two openings. Then draw a line at right angles to the curves on the smoked surface, and a second one at a distance which should be the sum of the two openings. Then count the number of waves between the two lines and divide them into the vibrations of the fork.

The illustrations on the plates are reproduced from tracings made on the ordinary gravity shutter.

Figure 3 shows the curve produced by the forks used: 100, 256, 320 and 512 vibrations.

Figure 4 is drop shutter, with and without rubber band; fork used 256 vibrations.

Figure 5 same as Fig. 4, except right hand wave is produced by use of two rubber bands. This second band is so strong as to often shatter the shutter, the gain of time being small.

Figure 6 illustrates the use of fork of 512 vibrations, with and without rubber band, the waves being double that of 256.

The sum of openings used was 3 inches as the cross line in the figures show, and the time of exposure is $\frac{1}{13}$ second with ordinary gravity shutter. With one elastic band $\frac{1}{51}$ of a second, with two bands $\frac{1}{64}$ second. The extra band is liable to destroy the wooden shutter, as stated above.

Figure 7 is Detective camera with time shutter.

Top curve shows slow motion.

Second curve shows spring half on.

Third curve shows spring all on.

Time, $\frac{1}{20}$, $\frac{1}{48}$, $\frac{1}{64}$ of a second.

The sum of the openings two inches.

Figure 8, Prosch No. 0 shutter.

Top curve shows slow motion.

Second curve shows spring half on.

Third curve shows spring all on.

Time, $\frac{1}{25}$, $\frac{1}{3}$, $\frac{1}{6}$.

The sum of the openings two inches.

The direction of the waves in Figs. 7 and 8 will be a curve instead of a straight line, since both these shutters describe the arc of a circle.

In all cases the time depends upon the sum of the openings; the smaller the openings the less the interval of exposure.

Should any one wish to make determinations himself, I would advise the use of the 256 fork. This can be used for all the ordinary exposers.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

I AM more than pleased with your new departure and new book. The get-up and the dress is first-class, but the contents are excellent, the type just the thing for the old of the craft. It is about sixteen years, I think, since I got the first number of your BULLETIN in 1869—first, as an advertisement, free, then for fifty cents, and so on. Now it is more than an advertisement, edited by able scientific men. It holds the first rank of journalism on photography in this country. Two numbers a month of your BULLETIN are as much, if not more, than the average photographer has time to read and attend to his business and keep track of the general news of the day. Wishing you every success, which you richly deserve, I remain yours, B. S. COOPER.

NEWTON'S STANDARD DEVELOPER.

As adopted by the Society of Amateur Photographers of New York.

No. 1.

Water	32 ounces.
Carbonate soda	3 "
Carbonate potash	3 "
Yellow Prussiate of potash.	3 "

No. 2.

Water	32 ounces.
Sulphite of soda (crystals).	1 ounce.

To use, take
¼ oz. No. 1,
1¾ " No. 2,
4 grs. dry pyro.
} For ordinary work.

Where all of No. 1 is to be used in one day, 100 grains of pyro may be added to No. 2 when the proportion of Nos. 1 and 2 would be for ordinary exposures the same as above. These proportions may be varied to any extent to suit the exposure, a larger proportion of No. 1 being used in case of over-exposure, or *vice versa*.

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THE ACTION OF LIGHT ON SILVER CHLORIDE.

BY SPENCER B. NEWBURY, PH.D.
Cornell University.

[We take particular pleasure in calling the attention of our readers to the following interesting paper kindly forwarded to us by the author, and reprinted from *American Chemical Journal.*]

THE blackening of silver chloride when exposed to light has been explained in various ways, but the conclusions of even the most careful observers show no agreement, and but little accurate experimental work seems to have been done to clear up the problem. Von Bibra (Journ. f. Prac. Chem., 1875, p. 39) has carefully collected the results of all important observations in this field, and in the same paper gives an outline of his own work on silver chloride and the *subchloride* produced by heating silver citrate in a current of hydrogen and treating the product with hydrochloric acid. The authorities quoted in this paper agree upon the following facts :

1. In the darkening of moist silver chloride by the action of light, chlorine is liberated, apparent by its odor, and easily recognized by the usual tests.

2. The darkening effect is retarded by the presence of free chlorine, ferric and cupric chlorides, and nitric acid, and accelerated by stannous chloride.

3. Blackened silver chloride is not decomposed by nitric acid; when treated with ammonic hydrate, silver chloride is dissolved, and a residue of metallic silver is left.

In addition, Von Bibra's investigations led him to the following conclusions :

1. Dry silver chloride, exposed to light, with frequent stirring until completely blackened, shows no perceptible loss of weight. The blackened chloride is not decomposed by nitric acid.

2. Silver citrate heated to 100° in a current of dry hydrogen until constant weight is obtained, yields a black powder which is soluble in a very large quantity of cold water, giving a red solution, and which, on treatment with hydrochloric acid, yields pure silver subchloride, the formula of which is Ag_4Cl_3. This compound is decomposed by nitric acid, leaving silver chloride; also by ammonia, leaving metallic silver. Von Bibra concludes that since chloride of silver, blackened by light, is not affected by nitric acid, it cannot be silver subchloride.

As there are on record no accurate observations of a loss of weight on exposing silver chloride to light, I first made this point the subject of a series of experiments. The calculated quantity of silver nitrate necessary to yield .1000 gram of chloride was accurately weighed out, dissolved in 100 cc. of water contained in a flask, and precipitated by the addition of a very minute excess of sodium chloride dissolved in the same quantity of water. The finely divided precipitate remained suspended in the water for a considerable time, subsiding after several hours' exposure to light. The exposed substance was in every case brought upon a weighed Gooch filter (consisting of a platinum crucible, the bottom of which is perforated and covered with a thin layer of asbestos) dried at about 140° C., and weighed. By the use of this admirable contrivance it was found possible to reduce to a minimum the experimental errors which have hitherto made observations on this point unsatisfactory.

To ascertain the amount of possible loss, the precipitate produced in the flask was several times directly weighed without exposure to light, with the following results :

	Found.	Calculated.
1.	.0996	.1000
2.	.0997	"
3.	.0997	"

A number of flasks were prepared as described, and exposed for varying periods to direct sunlight; meanwhile a current of air was continuously drawn through the liquid to retard subsidence and carry off liberated chlorine. After the exposure the precipitate was brought on to the filter, dried at 140° C., and weighed; then treated on the filter with hot ammonia solution, and finally the filter with the residue of metallic silver dried and weighed again. In every case a distinct loss of weight was observed, and the residue of metallic silver after treatment with ammonia generally corresponded approximately to the loss of chlorine.

Since the precipitate of silver chloride soon collects at the bottom of the flask as a black, curdy mass, it is evident that but little additional effect will be produced by light after the subsidence is complete.

Four similar flasks, as described above, exposed side by side to direct sunlight for several days, gave the following results:

	Weight.	Loss.	Metallic silver.	Met silver calculated from loss.
1.	.0967	.0029	.0054	.0085
2.	.0979	.0018	.0076	.0054
3.	.0969	.0027	.0078	.0081
4.	.0982	.0015	.0062	.0045

I am not prepared to offer any explanation of the discrepancies between the amounts of metallic silver found and those calculated from the loss of chlorine. In a very large number of experiments the same lack of agreement showed itself. The figures given serve, however, to prove that there is a distinct and weighable loss of chlorine on exposing silver chloride to light.

Similar experiments were made with the addition of small quantities of stannous chloride. In this case the precipitate is quickly blackened on exposure, soon assuming a gray color, and does not completely subside even after standing some days. On examination the precipitate was found to consist almost wholly of finely divided metallic silver.

In order to ascertain, if possible, whether a *subchloride* results from the action of light on silver chloride, or whether metallic silver only is formed, 10 grams of silver chloride were exposed to the sun under water for several days. During the exposure the substance was frequently stirred to present fresh surfaces to the light, and a current of air was constantly drawn through the liquid, as in former experiments. A small quantity of the resulting dark purple substance, dissolved in ammoniac hydrate, left a residue of silver equal to 2.94 per cent. of the amount treated, which gives by calculation a loss of chlorine of .96 per cent. I now hoped to isolate the product of reduction by dissolving out the undecomposed chloride, exactly as in the *fixing* of a photograph. The reagents employed for this purpose were sodium thiosulphate (hyposulphite), potassium cyanide, and sodium chloride. In each case, *metallic silver only* resulted. Even a cold concentrated solution of sodium chloride, frequently renewed, dissolves finally the last trace of silver chloride, and leaves a residue of gray, finely divided metallic silver. The purity of this residue was proved by a number of careful quantitative determinations.

These results certainly lead to the conclusion, that in the blackening of silver chloride by light, metallic silver is formed, and not a subchloride. Otherwise we must assume that the subchloride is decomposed into silver and silver chloride by the action of a cold solution of sodium chloride: which is at least highly improbable. The same conclusion has been reached by other investigators, but the experimental proof given by the action of solvents has been, as far as I know, heretofore lacking. Mr. P. C. Duchochois, whose work is reported in Anthony's PHOTOGRAPHIC BULLETIN for June and November, 1884, concluded that no subchloride is formed, from the fact that after dissolving blackened silver chloride in ammonia, no ammonium chloride is to be found in the solution; supposing the reaction to be as follows:

$$3Ag_2Cl+4NH_3=3Ag_2+3NH_4Cl+N.$$

There can, however, be no objection to writing the reaction thus:

$$Ag_2Cl=AgCl+Ag—$$

in which case the ammonium hydrate simply plays the part of a solvent of silver chloride; hence it does not seem to me that the action of ammonia throws any light on the constitution of the substance.

The only remaining evidence of the existence of silver subchloride is the fact that the blackened compound is not dissolved by nitric acid. This fact Von Bibra cites as evidence that the substance is *not* subchloride, since his subchloride prepared from reduced silver *is* decomposed by nitric acid. It has been suggested that the silver may be present in a passive form, but it seems to me more probable that the action of the acid is merely retarded by the presence of a large amount of insoluble chloride. Moreover, I find that long boiling with dilute acid does dissolve some of the silver. A sample of blackened silver chloride which gave on treatment with ammonia 2.94 per cent. silver, showed after boiling three times with fresh additions of dilute nitric acid, 2.74 per cent., 2.26 per cent. and 1.98 per cent. respectively.

I have made many experiments with a view to prepare silver subchloride from the citrate exactly as Von Bibra describes, but although great precautions were taken to thoroughly dry and purify the hydrogen and the silver citrate used, I have never succeeded in obtaining a constant weight. In every case, however, the chloride prepared by acting on the reduced citrate with hydrochloric acid, yields only metallic silver on treatment with sodium chloride solution. Although I do not regard these last experiments as conclusive, and am at present engaged in repeating and extending them, they are sufficient to strengthen the doubt which many chemists have expressed, as to the existence of the subsalt of silver.

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THE BULLETIN comes regularly and is much prized. Its new form and dress is a marvel of beauty outside, and on the inside it is radiant with diamonds of thought and light that cannot help but illumine the pathway of the studious photographer.

A. HESLER.

OBITUARY.

LYCURGUS BROWER.

Lycurgus Brower, familiarly known as Gus Brower, and formerly representative of our publishers on the road, died in Dayton, Ohio, on April 8th, of pneumonia, after an illness of only two days.

He was the son of Joseph P. Brower, once a member of Assembly from Rockland County, N. Y., and was born in Haverstraw, N. Y., on May 21, 1852. He was educated at the Haverstraw Mountain Institute, living after the death of his father (which occurred when he was but three or four years' old) with his brother-in-law, Mr. Isiah Gardner, who took a great interest in him, and gave him whatever advantages the village afforded in education.

At about the age of 17 Mr. Brower determined no longer to be a burden to his friends, and came to New York to engage in business. He was first employed by a dry goods house, with which he remained for about two years, until the firm gave up business. After trying other lines of business for short periods he finally, in the summer of 1871, came into the employ of our publishers, taking the position of junior entry clerk. His natural quickness at figures and his ability secured him rapid promotion, and in a comparatively short time he became store salesman and finally salesman on the road, which position he filled very successfully for a number of years. He was with our publishers nearly fourteen years, having left them only last August to accept a position with the Album Manufacturing firm of E. Posen & Co., in whose employ he was at the time of his death.

Mr. Brower was a man of great magnetism, and had lots of friends in every city and town which he had visited during his years of travel. As a salesman, he was more than usually successful, possessing, as he did, a wonderful tact of knowing the peculiarities of his customers almost at a first meeting. He was naturally very buoyant in his disposition, enjoying a good story to the fullest degree; fond of practising a traveler's joke, as many of his friends can testify from experience. Wholesouled and generous to a fault, the friend of every one.

Of rather a nervous disposition, he never was happy unless hard at work, and the livelier business was, and the more hours per day he could sell goods, the more gratified he was; never shirking the labor or begrudging the loss of rest—in fact, never seeming to need it. Kindly in disposition, he has cheered many a discouraged fellow-traveller by his advice and ready assistance.

Mr. Brower left a wife and one child of eight years to mourn his early demise. He was quite a young man (only thirty-three years), but from his experience and knowledge seemed to be older.

His remains were sent from Dayton to Haverstraw, and laid at rest on Sunday, April 12th, in the village cemetery, where he had expressed a wish to be buried. Members of the Masonic lodge of which he was a member, and many of his old associates from the city, attended, to pay the last respects to their deceased friend.

> " There are no words too beautiful to say
> Of one who goes for evermore away
> Across that ebbing tide which has no flow."

THE BEHAVIOR OF THE HALOID SILVER COMPOUNDS IN THE SOLAR SPECTRUM.

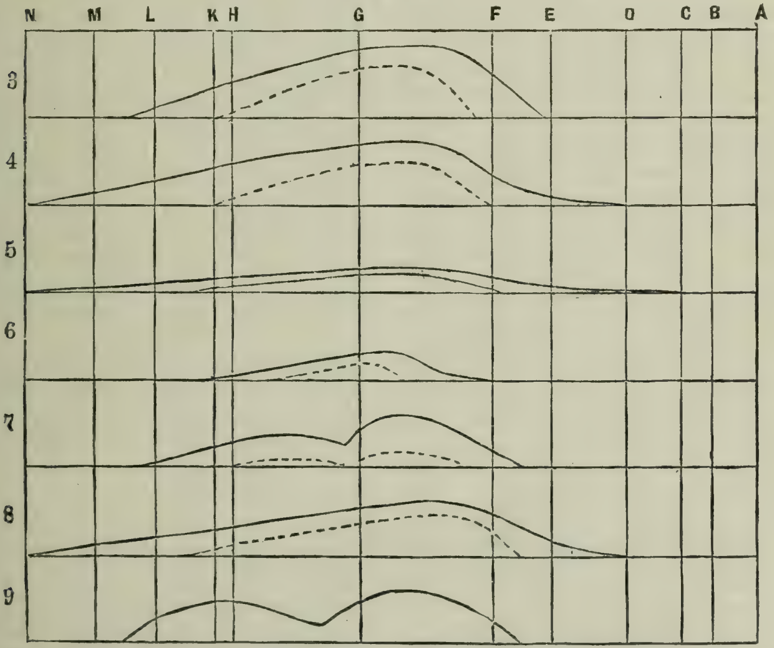
(*Continued.*)

BY DR. J. M. EDER.

A. BROMIDE OF SILVER IN GELATINE EMULSION.

If nitrate of silver solution is mixed with an excess of bromide of ammonia in presence of gelatine (in red light), a "very finely divided bromide of silver," will form, which appears red by transmitted light. Plates coated with this emulsion[1] and dried, after short exposure to the solar spectrum and development with oxalate of iron[2] or alkaline pyrogallic acid[3] show an action from violet to blue green (H to nearly F) with the maximum at G⅓ F[4]. From a longer exposure the action extends both ways (to M and E).

Fig. 7.



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[1] The following procedure for the production of such emulsions has proved practicable: 30 grm. nitrate of silver were dissolved in 750 c. c. of water and ammonia added, until the precipitate which formed in the beginning dissolved again completely; on the other hand 20 grm. bromide of ammonia and 30 to 45 grm. gelatine ("hard gelatine for emulsions" from the gelatine factory in Winterthur) are dissolved warm, and then both solutions are mixed at 35 to 30° by pouring the nitrate of silver gelatine in small parts into the bromide solution and shaking vigorously. The emulsion is then poured into a shallow dish (standing in cold water), cut into small pieces after coagulation and washed in water. For further details, S. Eder's "Theory and Practice of Photography with Bromide of Silver Gelatine." Vienna, 1881, as also his handbook of photography (vol. 8; "Photography with Bromide of Silver Gelatine.")

[2] One vol. cold saturated sulphate of iron solution, 4 vol. cold saturated neutral oxalate of potassium solution. For particulars: Eder's "Photography with Bromide of Silver Gelatine."

[3] The Glycerine-Pyrogallic-Developer can be recommended as a good one. The following stock solutions are prepared: A. 10 grm. pyrogallic acid and 10 grm. glycerine are dissolved in 100 c.c. of strong alcohol; the mixture keeps for several months. B. 20 c.c. ammonia (s. g. 0.91) 10 grm. glycerine, 6 grm.

The curve 3, fig. 7, gives a picture of the ratio of intensity of the action of the spectrum with regard to the *Frauenhofer* lines (the dotted line is the blackening after short and the full line after long exposure).

If the above-mentioned ammoniacal emulsion is digested for half an hour at 30° to 40° C., or if it is cooked for the same length of time (provided the ammonia was left out and the reaction was acid), the bromide of silver will pass over into the finely divided granular modification; the grains of the bromide of silver are hereby enlarged, it admits blue light in a thin film, and the total sensitiveness towards white light increases (which was described in my former treatise). The sensitiveness towards violet and green in the spectrum advances at the same time, and the maximum advances a little further towards F (G ½ F). But the action between G and F no longer appears so intense; the curve of the spectral action flattens and extends by longer exposure on one side to N, and on the other to D and further. (Curve 4 with shorter and longer exposure.)

A 3 to 10 times longer digestion, necessary for obtaining the before mentioned result, brings the bromide of silver nearer to decomposition; and at the same time changes the curve of spectral action. It flattens more and more, furnishes no sharp recognizable maximum[1] and the photographic picture is deficient of intensity. The sensitiveness towards white light increases, and also towards the less refractive rays (curve 5).

Curve 5 comes from prolonged digestion of the above emulsion; but still surer if the gelatine part of the liquid is much reduced during digestion, *e. g.*, to 50 per cent. of the liquid. The previously mentioned emulsion formula can be used for this by taking only 2 grm. gelatine during the digestion of ½ or ¾ hour and adding the rest afterwards (immediately before coagulating). Similar results are furnished by the method known as "*Henderson's* cold emulsion."[2] The total sensitiveness of such emulsions is very great, the reproduction of the details in the weakly lighted parts are good, whereas the high lights vanish; but it will be of good service for the photography of metal spectra.

After prolonged experiments, I succeeded in producing these action-curves by a change in the production of the emulsion.

Curve 3 appears most certain, when the bromide of silver undergoes only a short digestion in a thick liquid (in presence of much gelatine, *e. g.*, 5 per cent. of the liquid) and some ammonia. (See above formula.)

Curve 4 results from 3 by longer digestion. Most of the gelatine emulsion dry plates in the market which are used in practical photography, give similar spectra-pictures. Emulsions, which give such curves, are generally most suitable for spectral investigations Therefore my method, which has been tested, may be communicated here.[3]

These cases show distinctly that the spectral behavior of the bromide of silver, changes with its molecular structure, according as it is being precipitated from thick or thin solutions.

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bromide ammonia, and 100 c.c. of water are mixed. Immediately before use 100 c.c. of water are mixed with 3 to 4 c.c. of solution A. and 3 to 4 c.c. of solution B. If more clearness and contrasts are desired, 1 c.c. of bromide of ammonia (1:10) may be added; while the intensity of the picture increases, if only one-half of the water given above is taken.

The potassium developer is also very good. A. 90 grm. pure carbonate of potassium and 25 grm. neutral sulphite of soda are dissolved in 200 c.c. of water; B. 12 grm. pyrogallic acid, 1 grm. citric acid, 25 grm. sulphite of soda are dissolved in 100 c.c. of water. Before use 100 c.c. of water are mixed with 2 to 3 c.c. of solution A. and 2 to 3 c.c. of solution B. Before fixing it is advisable to put the plates for a few minutes into a concentrated solution of alum, by which the yellow coloration of the negatives disappears.

[4] That is, a third of the distance from G to F.

[1] Photometric tests in a scale photometer (Eder's handbook of photography, 1883, vol. 1, page 183) show that such bromide of silver gelatine films give, after very short exposure, a photographic developable picture, but the intensity of the picture does not increase in proportion to the action of light and soon reaches a maximum, which cannot be surpassed under a stronger action of light. Such pictures have, therefore, a deficiency of softness in the high lights.

[2] One grm. gelatine, 2 grm. carbonate of ammonia, 15 grm. bromide of ammonia, 0.2 grm. iodide of potassium are dissolved warm in 50 c. c. of water, and 5 c. c. ammonia (s. g. 0.91), and 140 c. c. of alcohol are then added. A solution of 20 grm. nitrate of silver in 100 c. c. of water is gradually added with shaking and left from 10 to 12 hours in a dark room at the ordinary temperature, shaking frequently. 30 grm. of hard gelatine are then soaked for half an hour in water, liquified, added to the emulsion and the mixture poured into ¼ to 1 liter of alcohol, in which the bromide of silver gelatine separates insoluble It is cut into small pieces, washed from 24 to 48 hours in running water, or for a longer period in standing water, and used for the coating of plates.

[3] 30 grm. nitrate of silver are dissolved in 250 c. c. of water and ammonia is added until the precipitate dissolves again. On the other hand 20 to 22 grm. of bromide ammonia, 0.2 to 0.3 grm. of iodide of potassium and 40 grm. of hard Winterthur-gelatine are dissolved in 750 c. c. of warm water. The silver solution is poured into the gelatine solution with gradual shaking; the temperature of both solutions should not be higher than 30°; digest for half an hour, pour into a flat dish and leave to coagulate. After 12 to 16 hours it is cut into small pieces, washed for 10 hours in running water, and then glass plates are coated with the liquified emulsion. If the washed emulsion is put into much alcohol, it is freed from water and will keep for months in the dark. The small quantity of iodine causes the pictures to be clearer and prevents the growing together of the spectra lines, without any otherwise detrimental action. During the first trials on the action of the color matter, it is advisable to work with pure Bromide Emulsion to avoid any complicating results.

B. IODIDE OF SILVER IN GELATINE EMULSION.

When precipitated with excess of iodide of potassium, it is many hundred times less sensitive to light than bromide of silver. With very long exposure a very weak picture is obtained at G after developing with alkaline pyrogallic acid, which extends with longer exposure towards H and F and has a maximum at G ⅓ F or G½ F (curve 6).

If washed bromide of silver gelatine is mixed with 10 to 50 per cent. of washed iodide of silver gelatine, the sensitiveness of the mixture is somewhat reduced towards white light and the intensity of the picture is generally greatly diminished, whereas the clearness increases and the plates show less inclination to the formation of halo. In the spectrum there will appear then two maxima: One between G and H, followed by a minimum,[1] and another maximum (generally stronger) between G and F, which latter is caused by the iodide of silver. By this means a mixed emulsion from iodide of silver and bromide of silver gelatine will become quantitatively more sensitive in the blue than pure ripened bromide of silver gelatine, whose spectrum picture is represented in curve 4 and 5. Curve 7 (Fig. 7) belongs to the ready mixed iodide of silver and bromide of silver in gelatine emulsion. The extension of the curve towards ultra violet and green occurs generally between curve 3 and 4.

While this condition of mixed iodide and bromide of silver, discovered by Abney, was accordingly recognized, and showed itself also distinctly in my tests, as mentioned, the question remained to be decided, whether during a long digestion of such emulsion these two maxima are sustained or pass into each other as mentioned by *Schumann*, but which was doubted by others.

During my tests, the separated maxima of bromide and iodide of silver passed by ½ to 1 hour's heating into one; likewise, when nitrate of silver was added to a mixture of iodide potassium and bromide of potassium, so that the precipitation and subsequent digestion of iodide and bromide of silver took place simultaneously, the sensitiveness of such an emulsion towards the less refractive rays was greater than that of pure bromide of silver emulsion, and the maximum of action was somewhat advanced towards F. The curve 8 shows the behavior of iodo-bromide of silver. A mixture of 1 mol. iodide of silver with 8 to 20 mol. of bromide of silver acted most favorably.

Although the emulsions which are richer in iodide of silver are more sensitive to green, the emulsions poorer in iodide of silver give stronger and handsomer pictures, *e. g.*, as soon as the bromide of silver contains 5 per cent. of iodide of silver.

The photographic behavior of iodo-bromide of silver emulsions give rise to the conjecture, that a kind of double combination of iodide and bromide of silver is formed; which does not appear impossible, as a mixture of chloride and iodide of silver in equal molecules shows also a surprising lowering of the melting point (according to *Kohlrausch*,[2] the melting point of chloro-iodide of silver is 260°) in comparison to iodide of silver (melting point, 540°) and chloride of silver (melting point, 485°). It is therefore not only the condition towards light, but also towards heat, which points to a changing action of the haloid salts of silver. The crystallized bromo-chloride of silver, which appears mineralogically as Embolite, deserves consideration here.

C. CHLORIDE OF SILVER IN GELATINE-EMULSION.

Developed with citrate of iron developer or oxalate of iron and bromide of potassium, it is less sensitive towards white light than bromide of silver. The maximum of sensitiveness lies further towards the violet (respectively, ultra violet) than with iodide or bromide of silver. Fig. 6, curve 1, shows the spectrum picture from chloride of silver gelatine in the large *Steinheil* spectrograph. The maximum lay on the border of the visible violet and the ultra violet at K H; the action reaches to N and F (under short exposure only to L and G). Chloride of silver gelatine emulsion with 10 to 30 per cent. iodide of silver, gives two separately recognizable maxima: One at H (belonging to the chloride of silver), the other at G⅓ F (belonging to the iodide of silver), as curve 9 (Fig. 7) shows. When digesting or cooking such emulsion, the two maxima equalize, similar to the iodo-bromide of silver, although with more difficulty and not in all cases. Chloro-iodide emulsion will stand stronger developers without giving foggy pictures, than chloride of silver emulsion, and the sensitiveness approaches more to that of the bromide of silver, without reaching the latter.

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[1] This minimum appears when a little iodide of potassium is added to pure bromide of silver gelatine, and the plates are flowed with the same without any long digesting, as was also found by Schumann. (EDER.)

[2] Annal. Physik. Chemie, 1882; Bd. 253, page 642.

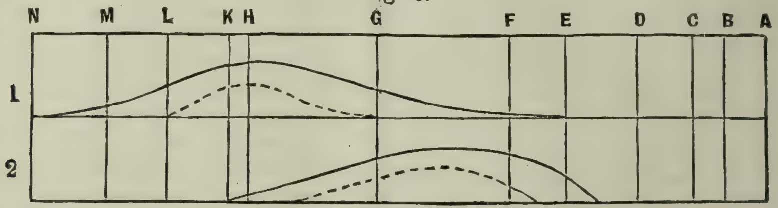
THE INFLUENCE OF COLORING MATTERS AS OPTICAL SENSITIZERS UPON BROMIDE OF SILVER GELATINE, IN RELATION TO THE INCREASE OF LIGHT-SENSITIVENESS TOWARDS GREEN, YELLOW, AND RED RAYS.

Although Bromide of Silver, under prolonged exposure, shows an action in spectral yellow and further, it is still so weak, that the pictures obtained therewith are thin and subdued. Prof. H. W. Vogel discovered in the year 1873 the fact, that coloring matter mixed with the Bromide of Silver Collodion, makes the latter sensitive for green, yellow and red rays, when they absorb the same, [1].

The behavior of bromide, chloride and iodide of silver in collodlon towards such "optical sensitizers" was investigated by him, as well as by *Waterhouse, Becquerel* and others, [2] and practically applied by *Ducos du Huron* [3] *and Cros* [4].

In the meantime a complete change took place in photography by the introduction of the bromide of silver gelatine process. New methods of production and development had to be found, and the "optical sensitizers," with which bromide of silver gelatine was colored, resulted in the beginning, of such doubtful action, that Prof. Vogel considered the inactivity of the bromide of silver gelatine towards optical sensitizers as a sign of this "modification of bromide of silver,"[5] although he was well aware of the weak sensitizing action of aniline red for instance. Then the firm *Attout* (now *Tailfer*) and *Clayton* appeared with a French patent (Pat. 152,645, of December 13, 1882, and March 29, 1883), according to which bromide of silver gelatine is made strongly sensitive to yellow by eosine; they called those plates "isochromatic," [6] and used them for photographing colored textures, etc.

Fig. 6.



The favorable action of Eosine was confirmed later by Schumann, and Prof. Vogel introduced into the market plates which were colored with "azaline," a coloring matter not known or to be had in market.

I took this matter up and subjected about a hundred and forty different kinds of coloring matter to an examination as to their sensitizing action, theoretically as well as practically.

How to color bromide of silver gelatine.

This can be done in a two-fold manner, either by adding coloring matter to the liquid emulsion or bathing the finished dry plate in aqueous or alcoholic solutions.

Quantity of the color matter added.

The correct concentration of the coloring matter is the first requirement of success, which I suppose to be known. Too much subdues the total sensitiveness, whereas too heavy coloring films over the bromide of silver, retard the access of light too much; the maximum actions will then very often become blurred. Too little coloring matter causes the action of the optical sensitizers to reach too far behind the sensitiveness of the bromide of silver itself.

The best concentration is different with different coloring matters. It is best to try first an addition of from 2 to 4 milligram per 100 c. c. of emulsion or the same quantity dissolved in water, which solution is then applied as a bath for the dry plates (from 2 to 5 minutes). Coloring matters of a strong tinting quality have to be applied diluted, others ten times concentrated. Of Eosine a $\frac{1}{10000}$ per cent. is sufficient to sensitize the emulsion visibly in yellow-green with the characteristic band, although the eye cannot recognize a reddish coloration. From such gelatine emulsion, the coloring matter can be washed out for many hours, apparently entirely, and still its sensitizing action is distinctly perceptible in the spectrograph.

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[1] Berichte d. deutsch. chem. Gesellschaft, 1873, p. 1305 u. ff. Jahrgange Photographische Mittheilungen Bd. 9, S. 736 u. ff.

[2] Eine vollstandige Uebersicht, s. Eder's Ausfuhrliches Handbuch der Photographie, 1884, Bd. 1, p. 50, und Bd. II, p. 14.

[3] Photogr. Corresp. Bd., 16, p. 193, u. 229. Also Eder's Handbuch der Photographie, 7, Heft.

[4] Photogr. Corresp. Bd., 16, p. 107. Also Eder's Handbuch der. Photogr. 7, Heft.

[5] Photographic News, 1883, page 426.

[6] Photogr. Correspond. 1884, pag. 63.

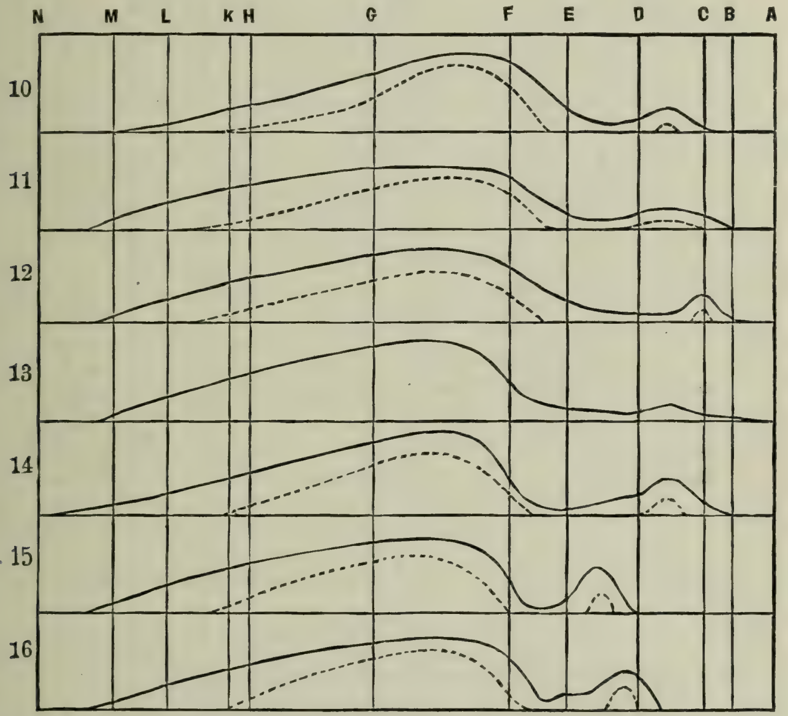
ACTION OF DIFFERENT COLORING MATTERS UPON BROMIDE OF SILVER GELATINE.

Of the large number of coloring matters tested, only a part proved to be optical sensitizers for bromide of silver gelatine. In their action they are to be distinguished by:

1. *The influence upon the total sensitiveness of the colored bromide of silver gelatine plate.* Oftentimes the light sensitiveness for the blue and violet part of the spectrum is subdued, so that, for instance, it possesses only the tenth part of the original (most of the violet and green and other coloring matters tested by me showed this property).

2. *The influence upon the relative sensitiveness for yellow, orange, etc.*

FIG. 8.



Independently, whether the sensitiveness of the colored bromide of silver gelatine for the blue part of the spectrum diminishes or not, it increases oftentimes in consequence of the action of the coloring matter, for yellow, orange, etc. For instance: By addition of Rose Bengal the sensitiveness of bromide of silver gelatine plates for blue will diminish to $\frac{1}{3}$ or $\frac{1}{6}$, while the sensitiveness for yellow-green (near the line of D) increases much more than with uncolored plates (compare also with cyanide). Here the total sensitiveness diminishes and the relative green sensitiveness increases; so that such colored plates, for instance, have to be exposed three to six times longer, to give a photographic picture in daylight; whereby, of course, yellow-green pigments appeared stronger, while blue appeared of the same strength, as with the uncolored ones.

If a photographic plate is to reproduce the colors *with the same light effect* as it appears to the human eye, the orange (at C) and the light blue (at F) have to act about evenly in the spectrum, yellow (at D) eight times and yellow-green (at E) about three times stronger than light blue, but violet should have only the tenth part of the action of the latter.

So far no process has been discovered which meets these requirements; but by inserting yellow glasses the blue can be reduced so much, that upon a *colored bromide of silver plate*[1] the yellow-green will then appear much more powerful than blue and violet, as shown by curve 17 (Eosine plates exposed through yellow glass). But the action in red and orange is still wanting here. For such plates, which, by optical and chemical expedients, reproduce photographically all colors with the same light effect (light value), that those have for the eye, I propose the name of "*orthochromatic plates.*" The photographic plates at present in use, as known, give the orange and yellow much darker (almost black) than dark blue and violet, which act almost like white.

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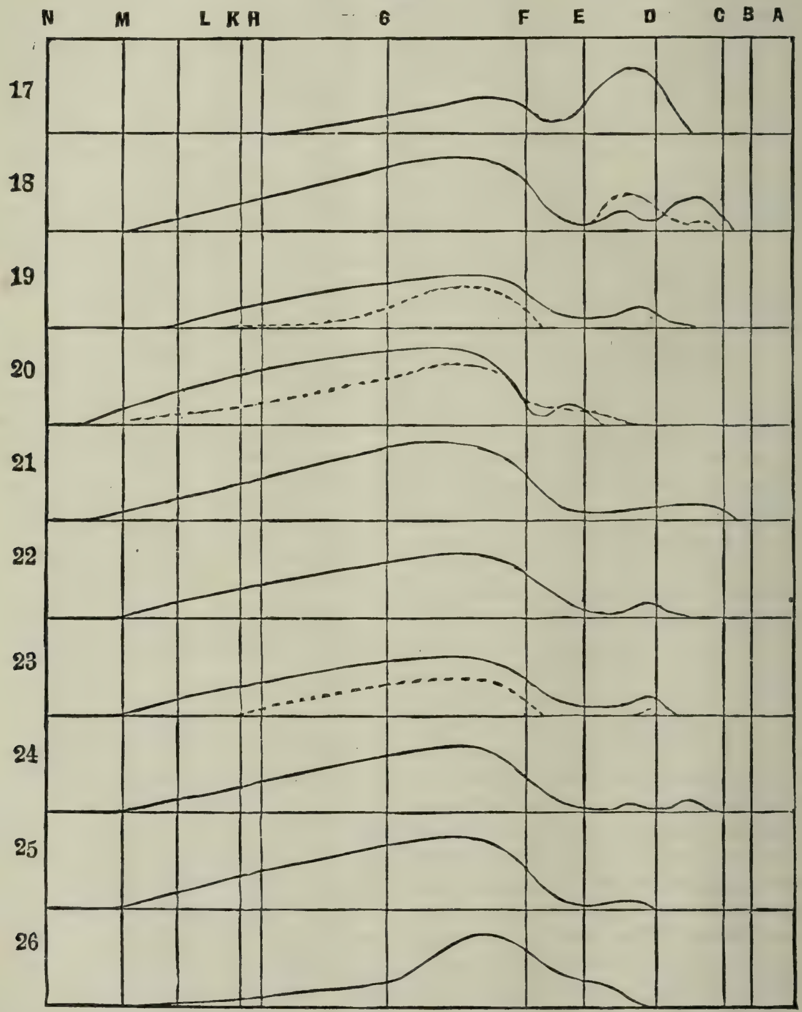
[1] The yellow and red sensitiveness of ordinary uncolored bromide of silver gelatine is so small, that notwithstanding yellow glasses placed before a painting, it cannot be photographed correctly in the right or proper light value of the pigments.

Fig. 9.



Hofmann's Violet, as well as different kinds of this color, like Dahlia, Primula, Iodine violet,[1] cause an increased action of sensitiveness in bromide of silver gelatine for orange, yellow and green—those that dissolve in water as well as those in alcohol. The total sensitiveness diminishes; the increased orange sensitiveness has the maximum between D and C (somewhat nearer to D). At short exposure this maximum appears in the position of curve 10; at longer exposure the action extends beyond C towards the red, and is to be followed through the green—with a minimum between D and E.

Methylviolet and *Violet de Paris* have a similar action and particularly the *Benzylrose aniline Violet* (*methylviolet* B), *Gentiana*

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[1] Applied as a bath in 30 or 40 per cent. alcohol, and the same for all the other "violet tints," soluble in alcohol.

violet B, *Gentiana Violet* B R, as well as the *Acid Violet*. The increase of sensitiveness in the orange takes place with all these coloring matters in pretty nearly the same place; but the maximum appears sometimes steep and strong (curve 10), in other cases (with changed concentration and longer exposure) the curve of action diminishes gradually to a weak maximum between D and C, very flat in orange until toward the red at B. The intensity of action in the blue upon such colored bromide of silver gelatine is greater than in the orange.

Of the green color matters: *Acid Green*, *Benzaldehyde Green* (of those in the market *Solid Green*, *Malachite Green*, *New Green*, *Bengal Green*) further *Aethyl Green* (*Solid Green*, J, *Brilliant Green*) and *Methyl Green*, show pretty uniformly the maximum of red sensitiveness at C. At short exposure the action of the less refractive rays is limited to this more or less distinctly expressed maximum (curve 12); but at longer exposure an action is observable as far as B in the red, as well as in a weak degree beyond the yellow and green; while a much stronger picture is produced from the blue to ultra violet. This sensitizing action of the green coloring matters named for red, can be traced only in strong direct sunlight and correctly selected concentration; it can, therefore, not with certainty be always recognized. The same applies to *Aldehyde Green* and *Chlorophyl*[1], which in my experiments, caused but very seldom a significant red sensitiveness of the bromide of silver gelatine.

One kind of *Iodine Green* showed the maximum of action between D and C in the orange(curve 13) and was sensitive to red till near A; in other kinds (which appeared less blue-green), the maximum was further toward C in the red. Aside from the reduced total sensitiveness of the plates colored with iodine-green, they of all showed the best sensitiveness towards the outer red. The experiments succeeded with larger dilution as well as with larger concentration.

(*To be continued.*)

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I LIKE the BULLETIN very much indeed. Truly it is the neatest photo journal I have had the pleasure to look over for many a day, and right to the point and no mistake.

J. A. SHERRIFF,
San Diego, Cal.

WISHING you the greatest success in the enterprise,

J. E. FARMER,
Sec. Cleveland Am. Phot. Ass'n.

THE BULLETIN is very good, and that new cover is a work of art. It is the best and cheapest of the photographic journals. Success to you in the new departure.

Respectfully, J. B. READMAN.

◆

EXPOSITION JOTTINGS.

[*From our Special Correspondent.*]

CONTINUING our description of the Photo-Exhibit, we come next to a small but neatly arranged show by Mr. Schurr of Lockport, New York. He shows evidence of good taste by his endeavors to avoid the too great monotony of styles in portraiture by introducing some artistic borders well designed and carefully printed in. Next, in order, we find a large frame crowded with pictures from the studio of H. Pietz, Springfield, Ill. This exhibit would be more effective if some space had been allowed to show the relieving background between the pictures also; while some of the portraits and views are excellent, others are inferior, and if the artist had exercised a more rigid self-criticism in excluding all but the good ones, and given them the entire space, they would have shown to better advantage.

There is one picture in Mr. Pietz' exhibit that more glaringly violates the most obvious rules of pictorial representation than any other on the walls.

It is a large 11 x 14 view of a fine Mansion; but while the lighting and chemical effect are good, clean and bright, as architectural representation it is conspicuously bad.

There is hardly a straight line in it; they all seem curiously warped and curved, and the whole house leans, until it looks nearly as insecure on its foundation as the leaning tower of Pisa.

Whether the lens used was bad, or strained far beyond its capacity, or a good one in unskilful or careless hands, it matters not; the faults of the picture are so undeniable that it seems strange to see it on exhibition, where only the best is expected.

The next exhibit is the largest on the walls and the most varied and ambitious in the effects sought for and attained.

It is from the celebrated studio of Guérin, St. Louis, and covers nearly five hundred square feet of space filled with rich and tasty frames containing carefully selected specimens of almost every possible variety of indoor portraiture, including every size from Cabinet to 20 x 24 plates.

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[1] Chlorophyl sensitizes bromide of silver collodion well for red and orange. (Becquerel, Ives u. A. s. Eder's Handbuch der Photogr. 7 Haft.)

We see here pure photography, in large heads and ¾ figures well retouched and well lighted, clean and vigorous in chemical effects, but simple and natural in pose and treatment, showing command of all regular and solid work.

Also a number of *Genre* pictures, in which the story is well told, and the outdoor picturesque accessories are well managed to produce pictorial effect, avoiding largely the set artificial look! which so many pictures have where outdoor effects are attempted in the studio. The pair representing two boys at see-saw are almost perfect in this respect. Others are attempts at more bold and difficult effects; for instance, a woman shipwrecked, on a raft in mid ocean, signaling to a distant sail. Of course any adequate representation of such a subject would be next to impossible by any ordinary photographic means at command in a studio, but by calling in the aid of after etching on the negative the desired effect is fairly attained.

This accessory aid of etching the negative is largely used by Mr. Guérin, and many of his large pictures show its effects.

Indeed Mr. Guérin has a line of photographic commercial work, whose effects would be impossible without its use; such as laughing children, breaking forth from huge eggs; or sailing away on giant butterflies; or floating out at sea in pearly shells; or lying ensconced in the chalices of snowy lilies; or resting in statue-like repose on marble pedestals; or rising high in air on outspread pinions; and while there may be opportunity for argument as to the artistic value of this admixture of line engraving, nessessarily coarse, with the delicate half tones and shadows of pure photography, there can be no question as to the daring originality of these conceptions, and the patient skill with which they have been wrought out. From a business point of view, they have been a great success, it is said, and they deserve it all.

The next exhibit is comparatively small, by Mr. F. M. Turner of Tuscaloosa, Ala., who shows three gilt frames, about 22 x 28, filled with very creditable cabinets evincing good taste and careful work. In addition to a half-life size crayon of some local celebrity, Mr. Turner also has an original design representing "The New South," where, under the stars and stripes of the Union, "Labor and Capital" join hands for the common good. This design is shaded up with the "Air Brush," and shows talent both in conception and execution.

Adjoining is another modest exhibit of a single frame containing "Stamp Portraits" by Mr. Genelli of St. Louis. The little faces are clear, sharp, bright, and must afford a cheap and convenient means for business men to make their faces familiar to their customers, which, it has been said, is the best method of advertising—and advertising is the hobby of this age.

It is the advertising spirit that makes such great expositions as this possible. Individuals, firms and nations are all seeking how to get themselves and their wares and products best before the world, until the genius of invention is taxed to devise new and original means for impressing each particular idea on the minds of all people. To this end photography lends willing and effective aid in many ways, and that without half exhausting its possibilities.

N. O., April, 1885.

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LOWELL ASSOCIATION OF AMATEUR PHOTOGRAPHERS.

The Lowell Association of Amateur Photographers completed a year of existence April 10th, and held its annual meeting on that date. Reports of the treasurer and secretary respectively showed the society to be in good financial condition, and to have justified in the benefits derived, the expectations of its organizers. Two new members were elected. The officers of the preceding year—F. H. Pullen, *president;* A. G. Walsh, *vice-president*, and R. F. Hemenway, *secretary*—were re-elected. In the discussion of plans for the coming season a committee of three was appointed to make arrangements for a field meeting to be held probably on Memorial day (May 30). Concord, Mass., with its wealth of historic and literary associations was unanimously decided upon as a place of meeting. The mention of "the rude bridge that arched the flood," where the patriots of '75 "fired the shot heard round the world." Waldenpond, and Thoreau, the homes of Hawthorne, Emerson and Alcott, Sleepy Hollow cemetry and many other spots, will suggest abundant and appropriate material for the amateur photographer's attention.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

APRIL 7, 1885.

President NEWTON in the chair.

Receipts of different journals acknowledged; also from the Scovill Manufacturing Company a cover for binding the different numbers of the *Photographic Times.*

The executive committee reported that Dr. Ehrmann would read a paper on the subject of "Whipples' Crystallotype Process. Next month Dr. Miller will read a paper on "Photomicography."

Mr. NEWTON: Dr. Ehrmann's paper is now in order.

Mr. CHAS. EHRMANN then read a paper entitled:

WHIPPLE'S CRYSTALLOTYPES.

The First Negatives Made on Glass in America.

IN the very interesting paper on the daguerreotype and wet collodion processes read by Dr. Landy before the Society of Amateurs, there was no attempt made to describe the processes used, or the experiments made, which, in the production of photographic pictures, have guided us from the metallic basis of the daguerrotype to the negative on glass. It is true all these processes, many of which became highly useful to the practitioner and a source of pleasure to the amateur, should be considered as forming an independent part of the history of photography. To describe them would fill volumes. Many interesting points are offered when reviewing them, and as the great mass of our modern operators have never acquired any knowledge of them, and the old pioneers in photography of thirty years ago have mostly all gone from our midst, a retrospection of the early times of our profession may be of interest, even be instructive to some. When glass became the carrier of the sensitive film, starch, gelatine, and eosine were its substance; albumen being the best adapted for the purpose, has stood its ground for years.

Reviewing photographic processes in historical order, it is proper to describe immediately after the daguerreotype, the callotype, better known by the name of talbotype, introduced by John Talbot. He sensitized so-called negative paper, developed and fixed his image similarly to other processes, but before his negative was printed from, it was made semi-transparent, by waxing it, in order to promote the progress of printing. The transparent paper suggested the idea to make the negative at once upon a transparent substance—glass. Sir John Herschel produced photographic pictures on glass in 1843, and actually printed in a camera obscura, on silver-chloride, deposited upon glass, a picture of his 40-foot telescope. Nièpce de Saint-Victor, a nephew of the great discoverer, had at the same time made experiments in a similar direction, and published in 1848, in the *Technologist,* a method to make negative pictures upon glass, coated with a diluted and iodized albumen. He has undoubtedly the priority in making glass negatives for practical use, a proof of which seems to be that contemporaneous authors have named his process Nièpceotypy. The first attempts were made with boiled iodized starch; and the films sensitized with a strong aceto-nitrate of silver bath. This operation was performed with blotting paper steeped in the silver solution and then laid upon the iodized film. The superfluous silver was afterwards removed also with blotting paper. A. Martin thought at the time a better mode of silvering the film might be adopted, but suggested none. The exposures were long; the plates were developed with gallic acid and fixed in a strong solution of bromide of potassium. Later it occurred to Nièpce to use albumen in place of starch, with which he had much better results, and says: "We believe albumen to be preferable in every way." He spread the iodized albumen upon the glass plate, dried it spontaneously, and sensitized by pouring the aceto-nitrate of silver solution over the plate; or "it is still better to dip the plate into the solution, held by a dish standing in a vertical position," which gives it a uniform and perfect coat. The silver coagulates the albumen and makes it adhere tenaciously to the glass. Still later he improved the process by adding from two to three grams of honey to the white of one egg, by which the action of these plates was much accelerated, developed and fixed as before, but suggested for fixing the hyposulphite of soda. Nièpce's results were astonishing; sharpness of lines, delicacy and harmony in the middle tints were never rendered more equally perfect before. This is an outline of Nièpce's process.

About March or April, 1850 or 1851, A. Whipple, and with him John Black, of Boston, had perfected an albumen-honey process, which was called crystallotypy, owing to the great transparency of the negative plates. The process is similar to Nièpce's, but greatly modified and improved. I will describe it to you in all its details as far as my memory serves me:

Iodide of potassium.......	3 drams
Bromide of potassium....	30 grains
Chloride of sodium........	10 grains

were dissolved in 2 ounces of water and added to a mixture of 8 ounces of albumen, from which the germ had been carefully removed, and 7 ounces of pure liquid honey.

Crystallized honey never answered as well when directly taken from the comb. In course of time the proportion of bromide was increased, by which a more rapid action was believed to take place. The addition of the chloride served to give better details in foliage when taking landscapes. When we observe that Victor Schumann, one of the foremost investigators, has recently proposed the addition of chloride to gelatine emulsions for the same purpose, it seems curious that more than thirty years ago, we, in our possible attempts and great want of knowledge, have hit what since has been proved to be correct by a series of scientific researches.

The mixture is beaten into a stiff froth, allowed to settle, and strained through flannel. The plates are coated in a similar manner as with collodion, but as with albumen a sudden evaporation does not take place; by returning the liquid from edge to edge repeatedly, or by spinning the plate around, a perfectly even coating can be effected. The plate is then laid down flat, another one coated, and so forth, until the required number is on hand. The plates having been coated have first become sticky in the meantime and are ready to be dried.

We used to dry over an alcohol lamp, repeating the operation three to four times, or until the film, when still warm, did not adhere to the finger when touched.

The most difficult and also the most important part was silvering the plate, so that the film comes from the bath without having been injured. The bath:

Nitrate of silver................	6 ounces
Acetic acid No. 8.....	from 6 to 8 ounces
Water..........................	60 ounces

previously iodized, as we do with a bath for collodion plates. The dried plate, yet warm, somewhat higher than the temperature of the bath, is now dipped for about one minute, during which time it is constantly moved about. After the plate is taken from the bath it is slightly washed if to be used immediately; if to be kept for future use (the plates keep well for six or eight weeks), a more perfect washing is necessary, in fact, all the silver should be washed away. Many difficulties arose at times when plates were sensitized; the film washed off in flakes; not acid enough in the bath; the plate too cold, or the glass not clean. The film cracked all over the plate in forms of lines of different thicknesses when the plate is too hot, or blistered and puckered when a crystalline honey is used, *or the glass is not clean.* Air bubbles made comet-like spots; dust on the plate, pin-holes; in fact, troubles arose as we have seen in all processes afterwards. After the plate had been washed it was ready for exposure; when still wet it worked much quicker than when dry. At the time the process was in use daguerreotypy was at its height, and a daguerreotype could be made much more rapid than an albumen negative. When a paper photograph was wanted we made a daguerreotype first, and copied it, reversing the original. For reproductions, for out-door work, for photographing inanimate objects, the process, although slow, worked well.

The developing of crystallotype plates is not easier or more difficult than with other processes. Gallic acid in saturated solution, occasionally increasing the strength with an alcoholic solution and a trace of nitrate of silver, developed a correctly exposed plate in a short time. With over or under exposures, however, a careful watching of the development for two hours and more was often necessary. We regulated the process then by weakening or strengthening the gallic acid solution and adding more or less silver to it. As we developed upon those level stands used for gilding daguerreotypes, we often applied the flames of an alcoholic lamp to accelerate the process in parts holding back. We fixed in hypo. With our little knowledge, and less experience, and from the fact that these plates do not resemble in appearance either emulsion or collodion plates, being semi-transparent, we actually at first did not know whether a plate was fixed or not. We took it for granted that five minutes were sufficient.

The greatest blunders were committed with washing the plates; had we done so properly no doubt our negatives would have kept for thirty years, which, however, they did not. Although it does not properly belong here, let me describe how we printed them. We salted the plain paper, silvered with ammonia nitrate, and fixed with plain hypo, saturated with chloride of silver, gold, and before that chloride of platinum came later. Washing the prints left a great deal to desire.

In course of time the process was improved and we made pictures quite rapidly, fluorides, even cyanides were added, and the proportions altered, till finally it had to succumb to collodion.

To show how favorably the process was considered, let me quote Mr. Lyndon Smith, of Leeds (*Liverpool Journal*, April 7th, 1856): "Whipple's process seems to be in great favor with the Liverpool photographers."

Mr. J. B. Cole, Baltimore (*Humphrey's Journal*, October 28th, 1856): "Whipple's albumen process is all that can be desired by amateurs; with it I have obtained facilities that gave me the greatest delight, and at every step of progress the fascination of the art increases."

Mr. James Ross, reading a paper before the Photographic Society of Scotland, January 13th, 1857, described an albumen process, and mentioned the accelerating action of honey, but regretted that with Whipple's process plates of larger dimensions could not well be made. He also spoke favorably of it for making transparencies, but advises to print by contact and develop.

Regarding Mr. Ross' opinion as to the difficulties of making large plates, allow me to remark that Mr. James E. McClees, in whose employ I then was, exhibited at Paris, in 1855, a panoramic view of Niagara Falls, composed of five 16 x 20 Whipple plates, for which he received a premium.

For transparencies, the process is excellent, either for copying in the camera or by contact printing. F. Lanquenheim, who has perfected a similar process—hyalotypy—used it for lantern slides, and for a number of years manufactured such slides exclusively for the McAllister's. With the introduction of collodion, Whipple's beautiful process was neglected, and is now almost entirely forgotten.

Through the kindness of Mr. Joseph W. Bates, the President of the Photographic Society of Philadelphia, I am enabled to lay before you a few negatives and prints made in 1853 and 1854. Do not subject them to the severe criticism of our present time, but look upon them as a relic of the infancy of photography.

He said that some of the pictures were made with Harrison, some with Ross and some were made with a telescopic lens.

Mr. MASON—Were these prints made and mounted at that time?

Mr. EHRMANN—Yes. These large ones were made in Mr. Bates' house. One picture, that of the normal school in Broad street, Philadelphia, was given five minutes' time. These are nearly all of them, the earlier pictures, made in 1853 and '54.

Mr. NEWTON—I would like to hear some remarks on this interesting paper of Mr. Ehrmann's. It is certainly a very interesting subject as it carries us back to the days of the infancy of photography and enables us to see the great contrast between the time when this process was used and the present.

Mr. J. TRAILL TAYLOR—I should like to ask at what time the process was published?

Mr. EHRMANN—I do not think the process was ever published except in the way I spoke of. The process was patented. Mr. Whipple sold the patent for $250 to McClees, of Philadelphia. From Philadelphia the process spread over the United States.

Mr. TAYLOR—If I mistake not, the process was first divulged at a meeting of the Liverpool Photographic Society in 1854.

Mr. EHRMANN—That may be. Mr. Stanfield, of Leeds, came to Philadelphia and he was delighted with the process.

Mr. TAYLOR—No sooner was it divulged than it was said that the gentleman who disclosed it would be pounced upon for so doing. I tried the process extensively and obtained very good results with very short exposures.

Mr. EHRMANN—There is a little circumstance connected with this process. When Jas. Cutting began to hawk his collodion process about the country Whipple saw the danger to his process and both patents were thrown into one. Anybody who bought Cutting's process, got Whipple's for half price.

Mr. MILLER—Were those very beautiful lantern transparencies by Langenheim made by that process?

Mr. EHRMANN—They were made by a similar process. At the time Whipple made pictures on glass, Langenheim made what he called heliotypes. His process was somewhat difficult and it was never divulged. It had one advantage over Whipple's, the negatives were a great deal whiter, but they did not print so well on paper. Langenheim made a great many transparencies on albumen from paper negatives where the paper was waxed before being sensitized.

A vote of thanks was given to Mr. Ehrmann for his interesting and instructive paper.

Mr. NEWTON—I would like to have some

of the gentlemen present who know a good deal about modern photography tell something of the processes employed at the present time as compared with those used in the early days of photography.

Mr. TAYLOR—The subject of albumen is a good one.

Mr. NEWTON—Albumen is a very good subject. Albumen has played a conspicuous part in the history of photography, and still continues to, up to the present time.

Mr. COOPER—I would like to state my experience with albumen as a sub stratum. In the days of the old collodion process, I noticed among the various galleries, large amounts of albumen used. I interested myself in the manufacture of lantern transparencies at that time. I took the white of one egg, shook it thoroughly, added to it a full quart of water; this was all necessary to give a basis for the collodion. One ounce of the already diluted solution was put in another quart of water. I never found the plates to slip, and no difficulty arose from the albumen used.

Mr. EHRMANN—That recalls another old process—the Fothergill. The plate was taken out of the bath, the silver completely washed off, coated with albumen, very much diluted, which remained on the plate three minutes, after which the plate was washed and developed with pyrogallic acid.

Mr. TAYLOR—What I referred to was the use of albumen, not as a sub-stratum, but in connection with the formation of the image. Mr. Ehrmann has referred to the Fothergill process. His description is not exactly what first emanated from Mr. Fothergill. The coated wet plate was rinsed, which did remove the nitrate of silver. It was then coated with albumen, after which it was washed thoroughly. Very beautiful results were obtained. A still more beautiful process was introduced by Dr. Reilly, and known as the Hot Water Process. It was the finest and most beautiful of all the processes in which albumen played a part. The wet plate having been sensitized in the usual way, washed thoroughly, received a coating of albumen; the preparation being from one part to four or six of water, one egg to four ounces of water, then put into a dish of hot water, and the albumen is coagulated, then taken out, hard and brilliant; when dry the details of the image were very fine. The silver is precipitated so finely as to partake of the character of a stain. In my estimation it is the most beautiful process there is. The plates keep well. It is very necessary ts flow the albumen all over the surface of the plates; if that is omitted the part not flowed with albumen becomes stained with black stain, while the other is clear and brilliant.

Mr. MASON—I should like to know if any one present knows anything about the process of making microscopic pictures. A gentleman called on me some time ago, wanting some small work done, but it was not in my line. A few months after he went to Europe with his family. As soon as he arrived in Liverpool he made inquiries about these, but got no direction; in London it was the same. In Paris he found it very difficult to obtain any information, though there were pictures of that kind for sale in many stores. At last an old lady, who had some for sale on a stand, gave him the address of the manufacturer, whom he called upon, but learned that he did not take orders for less than six gross, which was a great deal more than he wanted. Finally he agreed to make one half gross, and received one-half gross of these pictures each of five of his family for $17. The manufacturer told him he was the only one in the world who manufactured them.

Mr. BILLINGER—There was a gentleman living near Manchester, England, named Dancer, who, I believe, was the original inventor of this process, and who made a large number of English views in this way.

Mr. EHRMANN—They are nothing new. I remember seeing a picture after the Crimean war, of a monument, which was so sharp that it was wonderful to see.

Mr. GARDNER—Can Mr. Taylor give us some idea of how these pictures are made?

Mr. TAYLOR—Two microscopes are needed—one to form the image and the other to secure the focus. One of the most important parts is knowing when the focus is sharp. The distinction between microphotographs and photo-micrographs is that one is a reduction of a large object and the other a magnifying of a small one.

Mr. NEWTON—We are a little off the subject of albumen. As I said before, albumen has played an important part in the early history of photography, and it has not always been an angel of light, for it has caused as much trouble as anything else.

As a sub-stratum, it was used so thick on the glass that the negative bath became impregnated with it. It had almost gone out of use as a sub-stratum at the time the gelatine plates were introduced, which to a great extent took the place of the negative bath.

Among the different processes, that of making paper negatives was one of the interesting ones that preceded the wet process. The paper negatives were made with one-half the exposure of the old Tannin plate. I experimented extensively with the process of making paper negatives. I became disgusted with the Tannin plate, and Professor Seeley fitted me out with 14x17 bath dry plates. I took some up on the roof of my house to determine about the exposure required, and I failed to get any image. I finally exposed one seventy minutes, and got a faint image very much under-exposed. I had adopted photography in lieu of sketching, thinking it would be less tedious, but I found I had not made much progress. I made a great variety of experiments, and finally settled on a process which made beautiful work. Instead of using wax I used paraffine. I think I was the original operator in that direction, and the paper prepared with paraffine was much more sensitive than that prepared with wax. I prepared it on a large piece of soap-stone about the size of a sheet of negative paper, rubbed the paraffine over it, putting as many sheets of paper on as I wanted.

I will bring some of that prepared paper here to show you how beautiful it is. It was sensitized by placing it in a dish of water with iodide and bromide, one sheet upon another, as many as were needed, and left them there until they did not look greasy. Then took out the paper and hung it up until dry. In the same way I put the paper in a bath of nitrate of silver for about ten minutes, then poured the silver all off, washing the paper thoroughly in running water, then pressing perfectly flat. These paper negatives keep a long time, but they were very sensitive. I arranged my holder with a slight curve, focused the lens at the centre, then at the edge, and drew a curve from the sharp point at the edge to the sharp point at the centre, giving me the exact field of the lens, and used the lens with a full opening, getting it sharp at the edges, and in that way I did very quick work.

Mr. EHRMANN—Albumen is used in nearly all mechanical printing processes. There is something comparatively new in the use of albumen in emulsion. Mr. Britton has prepared an albumen which will not be coagulated by heat. The process has been published in the journals.

Mr. COOPER—There are so many of the gelatine bromide and chloride processes in which the cold method of emulsifying is entirely used that it seems unnecessary that the albumen should be needed. There are plates made by two or three makers, in which albumen is largely used, and very fine results are seen. Albumen is very generally used in this country now.

Mr. NEWTON—The statement that albumen was prepared, so that it would not coagulate with heat, may mislead unless it was stated that it would not coagulate with dry heat, only with moistened heat.

Dry albumen of commerce is subject to all the laws of albumen which never has been dry; when it is incorporated with water, water forms about 80 per cent.

I discovered that by holding it before the nose of a tea kettle the albumen coagulated very quickly. I prepared a cylinder as long as a sheet of paper with a slit in the top, and then put on a pressure of steam, letting it come though that slit. I then put a sheet of albumen on the frame and found the albumen thoroughly coagulated.

Mr. COOPER—I mentioned to the president to-day a little device in the way of portrait photography, and photographs of any subject where a line engraving effect is desired.

I take a couple of yards of capenet with extremely regular and fine lines. Place it directly in front of the dark room door. I expose a plate on it, and make an exposure. The net, which is of itself quite fine, is reduced to the size of a 5 x 8 plate and gives a very fine line effect. Turn the camera round on the sitter and make an exposure, which is the reverse of the process generally used. If black lines are desired take a positive from the negative and expose the plates to that, previous to going out. This may also be used nicely for the purpose of obtaining vignettes. I think this will prove an advantage in photography.

Mr. TAYLOR—A coarse textile fabric has been employed for imparting a grain.

Mr. EHRMANN—There is a process of that kind, under the Meisenbach patent. This is worked entirely different. Meisenbach copies from a positive and sometimes copies twice. There is a system of lines going all over the picture in one direction. He makes one exposure and then turns the line negative round so that the lines cross each other and the half tones are broken up.

Mr. COOPER—I found it very easy to produce any kind of a line I desired, angular or undulating. In the hands of an artist very fine effects could be had, the variations of the line is entirely within the artists' control, and that is the advantage of this textile fabric over anything of a wire nature.

After some further discussion on the subject, the meeting adjourned.

Before adjourning, President Newton announced that the American Institute would change their quarters, on the first of May, and that hereafter the Photographic Section would hold their meetings in the Mercantile Library, where the accommodations would be better than those in the building they met in now.

The president also said that he would appoint a committee to look after the room and see that everything was ready for the next meeting.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Annual Meeting of April 14, 1885.

THE first annual meeting of the Society was held at its rooms, No. 1,260, on Tuesday evening, April 14. The meeting was called to order at 8.20, President Beach in the chair. The President announced, on behalf of the Committee of Arrangements, for April 28, a lantern exhibition confined to the work of Mr. George H. Wood, of Philadelphia, an artist of note, and said he had no doubt it would be very interesting. He announced a social meeting on Wednesday evening, April 22, and also on May 6, to which all members are invited. He also said, "I regret to be obliged to announce the death of Dr. John Butler, on April 10. He was one of the original signers at the meeting for organizing the Society a year ago, and he was very fond of photography. Last summer, however, he was obliged to give it up on account of his professional business.

The Secretary read a letter from Mr. George Tasheira, of the Pacific Coast Amateur Photographic Society, asking for an exchange, accompanied by a number of prints of scenery near San Francisco; also, a notice from the Chicago Amateur Photographer's Club of a reception to be given in the Art Institute; also, the prospectus of the Postal Photographic Club.

A synopsis of the minutes of the last regular and special meetings was then read, and was approved as read.

The Secretary presented the following names of gentlemen, who had been proposed for membership: Ernest Edwards, George B. Agnew, Allen S. Apgar, John T. Granger, and Samuel M. Hyde. On motion, it was voted that these gentlemen be declared elected members of the Society.

Then followed the reports of the various committees, which we are compelled to leave until our next issue, owing to lack of space in our columns. These include the long expected report on dry plates, also one on lenses, and another on a standard light.

The reports of the secretary and also that of the treasurer, were also read and ordered to be placed on file.

The President—it is due to me on the termination of our first year's existence to make a few remarks in regard to our society.

The reports which the secretary has read show that the first year of our existence as a society, in spite of many difficulties, has been prosperous and, to me especially, it is gratifying to notice the general harmony and good feeling which has prevailed and also the deep interest manifested by members in the society's welfare. At, I might say, the very birth of our organization, when we were all comparatively strangers to each other, and when it was necessary that some of us should come forward and by our voluntary subscriptions guarantee a financial fund for the year, there was one gentleman who by his wisdom foresaw the possible future we might drift to, and with unostentatious generosity and liberality, presented to me for the use of the society a very liberal sum of money. He has still later largely contributed important and useful apparatus. I need but mention his name, Mr. Henry Parsell, and I trust his example and the spirit he manifested will ever be the means of encouraging others to regard the future welfare of the society in the same generous manner. We must be supported liberally in order to provide for the many benefits we hope to confer.

As I look back upon the work we have accomplished, I see nothing to be ashamed of, but, on the contrary, much which merits praise.

We have become an established and necessary institution, and, through the aid of several interested and efficient members, have been able to inaugurate a systematic and scientific way of investigating important subjects. The practical work in the way of experiments accomplished by our special committees supplies information which no single member would have time to obtain. Work of this nature is always appreciated, and in commencing it, we have already won the esteem and admiration of the entire photographic world, and are looked upon in many quarters as a leading, energetic and pushing Society.

To accomplish so much is something to be proud of. I desire to extend my thanks on behalf of the Society to the photographic journals, dealers and plate manufacturers for the cordial and generous support which they have given us. It is impossible for me to express to you how much I appreciated the uniform kindness and courtesy and consideration which you have shown me during my term as presiding officer, and I assure you if I have, either by my actions or words, given offence to any one of you, it has been purely unintentional, and I trust will be overlooked. It has been my constant endeavor to treat every member equally and fairly, and to do what was in my power to give assistance when desired.

In closing, I need but add a word in regard to my relations with the officers and members of committees, and it is this, that no presiding officer could have desired to have had the cooperation of a more able, intelligent, interested and active body of gentlemen than they have been to me. They have devoted much valuable time to the advancement of the Society's interests, and have been in accord with my ideas of what we should strive to accomplish. They have my most hearty thanks for the invaluable aid they have rendered me, and I think we owe much of our past success to their wise counsel and advice.

That we may continue to flourish and grow until we become a recognized authority in photographic matters is the earnest wish of one who has had the best interests of the Society at heart. (Applause.)

Mr. WALKER: Mr. President and gentlemen—I had not contemplated saying anything this evening at all, but the address which our Chairman has just made to you and in which he so courteously alludes to our active cooperation, and the very handsome manner in which he spoke of the membership of this society, deserves, I think, something from us, and I wish to express, on your behalf, to him personally the sentiments that we feel toward him for his kindness to us; for all that he has done for us and for the society; for the uniform courtesy and consideration that we have received at his hands, which we deeply appreciate. We know that this society could never have progressed without that energy of purpose which he possesses, and without that courtesy to the members which he has manifested on all occasions. We know very well that it is a difficult position for a man to occupy. He has, in a certain sense, to use the greatest care in the conduct of our meetings and in the favors which he has to bestow, and it is possible for jealousies to arise and for troubles, which could not be anticipated, to come up. These he has avoided, and we meet here to-night without any bitteruess in our hearts, and feel spurred toward trying to do more and more for our society. I therefore move that the heartfelt thanks of the members be extended to the Chairman.

THE PRESIDENT—It is impossible for me to express my feeling for the kindness which you have manifested in your remarks. In putting this motion to the Society I feel, in a sense, that I am not competent for the office to which you have elected me, but am very sure that I shall strive to do what is possible for the Society.

The motion offered by Mr. Walker was then carried.

(A recess of several minutes was taken, during which time the members cast their votes for new officers.)

The result of the balloting was the election of the following officers for the ensuing year:

F. C. BEACH, *President.*
Dr. JOHN H. JANEWAY, *Vice-President.*
CHAS. W. CANFIELD, *Secretary.*
JOS. S. RICH, *Treasurer.*

Executive Committee.

Henry J. Newton, George H. Ripley, Robt. A. C. Smith.

Committee of Arrangements.

Henry V. Parsell, Gilbert A. Robertson, W. J. Scandlin.

Committee on Gelatine Plates.

Henry J. Newton, Dr. John H. Janeway, Dexter H. Walker, C. W. Dean.

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I FIND it a very complete photographic magazine, and a reliable advertising medium for standard goods of superior quality.

Very truly yours,
D. B. VICKERY.

THE BULLETIN visits me semi-monthly, much to my pleasure and profit. I am

Yours most respectfully,
W. D. PARSONS.

Bibliography.

PHOTOGRAPHY FOR AMATEURS, BY T. C. HEPWORTH: New York, Cassell & Co.

This is a handy little volume of 160 pages on matters pertaining to the work of amateur photographers. The author has taken much pains to give concise and readily comprehensible statements upon the topics upon which he writes. Too often in books of this character there is an immense amount of mere talk and much evidence of the extensive reading of other books with a view to compilation. The volume before us is not of this character, but is written by one who is evidently practically acquainted with the art of photography. Any detailed notice of the book cannot be undertaken in the space at our command; but a general idea of its method of treatment may be gained from mention of some of the headings of chapters. Under seventeen heads we note the treatment of the following topics: Apparatus; landscape and portrait work; the dark room; chapters on the work with negatives; making and mounting prints both in silver and platinum; making emulsion and coating the plates; transparencies and enlargements; together with useful hints on faults and their remedies.

Some of the chapters are excellent reading for the amateur who has overcome some of the initiatory difficulties of photography. We have read many of these with much pleasure and have found the subjects treated in a manner at once pleasant and instructive. This is especially true of the chapter on landscape photography.

To those who are beginning the study of photographic work we can heartily recommend this useful little volume. It will save them much reading in volumes of more extended size, and its short and clear statements will prevent them from making mistakes.

THE PLATINOTYPE. Philadelphia: Willis & Clements, 1885. Second Edition.

In the small space of 24 pages we have a very concise description of the method of working the new platinotype printing process. The results obtained by this process are remarkably beautiful, and the *modus operandi* seems to be of the simplest nature. An example of the work, sent us with the little book before us, is certainly all that could be desired. It appears to us that for many purposes this method of printing should become popular as the softness of the work obtained is to us its great recommendation. In the pages before us we have directions for sensitizing the paper (or other material); the method of exposure; development; cleaning and washing; and also on making solar prints, prints on fabrics, etc.

We have recently received a very handsome catalogue from J. C. Somerville, of St. Louis. This is one of the best lists of photographic requisites we have seen lately. It is well printed, the cuts are good and clearly made, and altogether is one of the handsomest productions in this line. We must congratulate Mr. Somerville upon his good taste, even in so commonplace a thing as a trade catalogue. It consists of 160 quarto pages filled with descriptions of every article that the photographer needs, from the tripod of the amateur to the handsome frame for the finished crayon work of the professional.

What Our Friends Would Like to Know.

Q.—J. T. G. writes: Enclosed, please find samples of my failures in the use of Rapid Glossy Printing Paper, and I will be very glad if you will inform me the cause of the trouble. The prints worked all right until they went into the hypo, which for the small print enclosed, was composed of 1 oz. hypo solution and 6 ozs. water, as given in the circular pasted on the top of the box. The larger print was immersed in the weaker solution, hypo 1 oz. to water 8 ozs., in accordance with the formula in Mr. Roche's book. Soon after the prints went into the hypo they began to scale as they now show, pieces of the film quickly becoming detached and floating away from the print, and other portions commencing to run as shown on the upper right-hand corner of the small print herewith.

A.—The trouble with the prints appears to be that the solutions were too warm, and they have been carelessly handled. The marks upon them are finger stains in one case, and blisters from heat of solutions in the other. After development, place the prints in strong alum solution, before fixing; this will harden the film, and and remedy the difficulty of blisters. But always keep the solutions cool.

Q.—L. W. K. writes: 1 lb. each of protosulphate of iron and protosulphate of iron and ammonia, with 1 oz. of copper sulphate (saturated solutions), keeps indefinitely. What obection is there to its use with oxalate in dry plate developing, in place of saturated solution of iron, which keeps indifferently? Also, in enlarging, which is better, to have the object in front of or behind the condensing lens?

A.—There is no objection to using the iron mixture you propose, but a few drops of sulphuric acid in the ordinary iron solution will answer just as well, if the bottle is kept well corked. In the matter of enlargements, see the article in the last issue of the BULLETIN, April 11th, for full directions.

Q.—J. S. M. writes: By what formula can I obtain the best results in photographing architectural drawings by the wet process? Also, please give me the best redeveloper for wet plates. I use 45-grain collodion bath: 2½ grains bromide of cadmium; 5 grains iodide of ammonia; don't redevelope; the results are not decided enough.

A.—In regard to first question, follow the directions given to K. J. B., in BULLETIN, page 29, January 10, 1885. This is the best formula for line work.

Your second question appears to call for half-tone work, and we can recommend the following:

Water, 10 ounces; pyrogallic acid, 20 grains; citric acid, 10 grains. To one ounce of this solution add a few drops of a solution of silver nitrate, 15 grains to the ounce.

Q.—C. C. L. sends a silver print and says: "Can you tell me why this print looks so mealy? The paper looks so when printing. It is floated two minutes on a bath of 50 grains at a temperature of 70° F.; and the bath is a new one."

A.—The print when we received it looked all right. There is no doubt that some condition of the atmosphere is the cause of this albumen paper trouble.

X. Y. Z. writes: In a recent issue of the *Photo. Times*, which was handed to me, I read an article headed "Another new developer," or words to that effect, and advocating a combination of carbonate of soda and ammonia.

Mr. Kellogg, the writer, speaks very highly of this method, and is, no doubt, right; but it is a surprise to me to find it classed as new, as a good many dates are handy which prove the contrary.

This, however, is not the main object of my query. The claim occasioned surprise, but the editorial foot-note was *startling*, for we are gravely informed that carbonate of soda in conjunction with ammonia had been recommended as a *restrainer* by some European *savant*.

Is this possible?

Who recommended it?

Who indorses his recommendation?

I have a *vague recollection* of bi-carbonate of soda having been recommended as a restrainer in combination with ammonia, but my memory treats me scandalously by refusing to recall the other instance.

X. Y. Z. is undoubtedly correct; the use of carbonate of soda with ammonia is not new. And carbonate of soda is just the reverse of a restrainer; hence its use in the modern soda developer.

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PHOTOGRAPHING A THIEF IN ACTION.—A Mrs. Curtis, carrying an alligator-skin hand-satchel which contained $22, entered a photographic gallery in Peoria Street yesterday to have her photograph taken. Two men unobserved followed her into the gallery. While the photographer was in the darkness of the camera he heard a great noise and pulled the trigger, taking an instantaneous photograph. When he got his head out of the curtain a man was rushing out of the door and Mrs. Curtis was screaming. The hand-satchel was gone. Mrs. Curtis said that a man had rushed in and snatched her satchel from her lap. When the photographer looked at the plate he was astonished to find that he had a double photograph. Portions of Mrs. Curtis showed up through a maze of outstretched hands, a fur hat and a brown overcoat. He had photographed the thief in action. The Des Plains Street officers arrested William Burns last evening. Some of Mrs. Curtis' money was found in his possession to-day, and he was fully identified by the photograph.—*New York Tribune.*

Views Caught with the Drop Shutter.

A FIRE at Corning, N. Y., on April 5, caused the total loss of Treadwell & Davis' photographic gallery.

THE extensive photographic store of Messrs. Smith & Patterson, of Chicago, has been completely destroyed by fire. We are extremely sorry to have to record this unfortunate loss; the firm having only started in business about a year ago.

WE note with regret the death of George Swan Nottage, the Lord Mayor of London, who passed away on April 11, at the age of 62. Mr. Nottage was the founder of the well known London Stereoscopic Company.

We are glad to note the organization of the "Camera Club of Hartford" and wish it every success. The officers are: W. J. HICKMOTT, *Prest.;* ELMER M. WHITE, *Sec. and Treas.* Meetings are held regularly the fourth Thursday of each month.

THE Art institute of Chicago gave a reception to the Chicago Amateur Photographers' Club on Monday evening, April 20. The Executive Committee were S. W. BURNHAM, E. WYLLIS ANDREWS, M.D., and GAYTON A. DOUGLASS.

(Could not some such a reunion of kindred lovers of art be brought about in New York City?—Editor of BULLETIN.)

Mr. Blair, of the Blair Tourograph Co., and Mr. Prince, a well known merchant of Cincinnati, have joined forces and gone into the photographic stock business in Cincinnati, under the firm name of Blair & Prince, as our advertising columns will show. These gentlemen have laid in a stock of the best goods of our publishers, and are prepared to furnish their customers with the latest photographic novelties.

MR. J. A. Anderson's camera factory was nearly destroyed by fire the other day. He was insured, and we hope he will not suffer any great loss. He will immediately rebuild. —*The Eye.*

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ADVERTISING RATES.

	1 ISSUE	2 ISSUES.	6 ISSUES.	12 ISSUES.	24 ISSUES.
1 PAGE....	$15.00	$24.00	$65.00	$120.00	$216.00
½ "	8.00	13.00	33.00	62.00	110.00
¼ "	5.00	7.50	18.50	32.00	56.00
⅛ "	3.00	5.00	10.00	17.00	30.00

Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

Photo-Gravure Co. N.Y.

ANTHONY'S
Photographic Bulletin.
PUBLISHED SEMI-MONTHLY,
Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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Vol. XVI. SATURDAY, MAY 9, 1885. No. 9.

THE NEW YORK AMATEURS AND THEIR WORK.

THE completion of the first year's existence of this live society marks an era in photographic circles in New York. With the call that was issued in contemplation of the formation of the society about a year ago, a new life was given to photographic art in this city. The influence of the society is not confined to New York alone, but its power is felt in England and throughout the length and breadth of the United States. What has been accomplished in the brief year of its existence may be seen from an inspection of the reports in the columns of this and the previous issue of the BULLETIN. The report of the Secretary, Mr. CANFIELD, gives an outline of the year's work, and although this report is brief, and very much to the point, it records the completion of an amount of work which no other photographic society in this country has ever accomplished in the same amount of time. The financial statement of Mr. RICH is very satisfactory, and we are glad to note that so thoroughly business-like a gentleman is retained in this important office for the ensuing year.

The retiring remarks of Mr. BEACH were entirely in the spirit of the man—kind and generous, yet independent, and with but one thought, the success of the Society of Amateur Photographers. On his re-election, and in his remarks on the "Needs of the Society," he made some very happy suggestions for the inventive members to ponder over. We particulaly recommend to our readers this part of his able address. That Mr. BEACH does not intend to rest upon his oars and allow the stream to carry him along, is evident from his remarks about the more extended work of the society in the future. The suggestion to offer prizes for new forms of apparatus is, we think, of equal importance with prizes for pictures, and will, doubtless, lead to some good results.

A competition of this character, under the auspices of the Society ot Arts in London, led to the production of cheap and useful microscopes and the adoption of the well-known "society screw." This latter benefit is a boon to microscopists, and one worth many hundred times the cost of the prizes which led to its adoption. The adoption of a similar screw for the flanges of photographic lenses would likewise benefit photographers.

The cultivation of art, as applied to photography, is indeed one of the best forms of work that the society can undertake. That the New York Amateurs have already done something in this direction we are well aware. Yet a systematic and short course of lectures by some competent hand would confer untold benefits upon its members; and what is more to the purpose, would be a step toward making more photographers, what they all desire to be called, photographic artists. We shall be most glad to see some systematic artistic instruction of this kind, and hope it may be so arranged that professional photographers at a reasonable cost may obtain some of the benefits to be so derived.

Mr. BEACH'S commendation of the system of marking stops, advocated by Mr. DEAN, meets our entire approbation. It is one of the most confusing things in photographic intercourse to understand the stops a man is talking about. For example, Ross numbers his stops from the largest to the smallest, the former being marked 0, while Darlot follows just the reverse, and some makers use both methods for different forms of lenses which they manufacture. Such methods are against the spirit of all Science and Art, for in these there is a constant tendency to uniformity in the nomenclature of apparatus and accessories.

The outline of future development for the New York Society of Amateurs mentioned by Mr. Beach is indeed somewhat ambitious; but when we remember what has already been accomplished, we see no reason why all Mr. Beach's desires should not be realized. It needs but the president and those energetic members to whom the society owes so much, with the moral and financial support of those who are less conspicuous in its management, to assure the realization of the best wishes of its true friends.

One point in the management cannot be guarded with too jealous a care, and that is, that the society shall not fall into the hands of any set of dealers or photographic stock merchants. Every tendency to advocate any particular business house should be rigidly and fearlessly suppressed. Give the manufacturers all an equal footing, and let impartial members call the attention of the society to the merits and demerits of particular pieces of apparatus. By so doing the society will retain the good opinion and powerful support of those that are its best friends, the lovers of the photographic art.

With their worthy president and his colleagues on the various committees, we see no reason why the New York Society of Amateur Photographers should not realize their best wishes. And in all things upright, independent, and to the advancement of the photographic art they can rely upon the unstinted support of the BULLETIN.

[*From Scientific American.**]

AN ELECTRICAL STANDARD FOR MEASURING LIGHT.

OUR large engraving represents a new form of arranging an incandescent electric lamp with reference to its use as a standard light for photographic purposes, and is the outcome of a long series of experiments by Mr. Thomas A. Edison and his assistant, Mr. John Ott, in charge of Mr. Edison's laboratory.

The problem of obtaining a steady light and uniform current from a variable battery, with lamps of varying resistances, has been a puzzling one, but has recently been very ingeniously overcome; and it is our purpose to relate some of the incentives which led Mr. Edison to reach the result obtained.

During the past winter months the officers of the Society of Amateur Photographers, of this city, undertook to invent or provide some form of standard light which could be depended upon, to be used in testing the sensitiveness of different brands of gelatino-bromide dry plates. It occurred to them that possibly Mr. Edison might devise a uniform electric light, the actinic qualities of which, it was well known, would be invaluable for the kind of work to be undertaken.

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* We are indebted to Mr. F. C. BEACH for the cuts to illustrate this extremely interesting article.

The strength of the light required was to be equal to one candle power. When the matter was first introduced to Mr. Edison, he was of the opinion there would be no difficulty in obtaining a means of accurately measuring and controlling the resistance of such a small lamp, if a battery was employed.

The original plan was to interpose a known resistance in the main circuit with the lamp, which could be varied, and also an ammeter or a voltmeter for measuring the variations of the current; but, after a large number of experiments, it was found impossible to make an instrument delicate enough to accurately measure the very low resistance in the lamp, which is said to be equal to about three-fourths of an ampere.

Mr. Edison then turned his attention to the utilization of the electrical compensation balance invented a few years ago by Prof. Poggendorf, which is generally recognized as being the most delicate method of measuring the electromotive force of batteries, and at the same time has the advantage of being entirely free from any detrimental polarization.

In this method of measurement the currents from two batteries are so balanced by the insertion of a variable resistance that, if a galvanometer is inserted in the circuit, no traces of a current can be perceived.

The arrangement as shown consists of a standard constant battery, a galvanometer, a key, a rheostat or resistance wire made in two sections, two parallel brass rods arranged directly above each section of the wire, provided with adjustable collars, which connect the bars to the sections of wire, and a switch, all fixed upon a base which rests upon a photometric testing box. Within the latter, supported upon a sliding board, is the standard electric lamp.

Hinged to this board is a long wooden rod, which, when the side of the box is closed, as it is intended to be for actual work, permits the operator to move the lamp at the open end to different distances from the sensitive plate, held in a plate holder slide, shown at the opposite end. The lamp is connected by flexible cords to the binding posts leading to the main battery and one of the sections of the rheostat wire.

The apparatus is intended to be used in the photographic dark room. The cell of the standard battery, S, is the standard by which the electro-motive force of the Fuller, or main lamp, battery, M, is measured.

The battery, S, which is comparatively new, was devised by Mr. Geo. Wirt, of New York, and is a modification of the well-known Daniell battery. It is so constructed that the fluids cannot become disturbed or mixed through any slight jarring. It consists of three square bottles, 1¼ inches square by 4½ inches high, with a neck ⅞ of an inch in diameter by 1 inch long, securely clamped together with metal screw rods at the top and bottom, and held in an upright position by a light wood framework, as shown in the engraving. In the upper part of the adjoining sides of bottles I and II is drilled a small hole ⅜ of an inch in diameter, and in the lower part of the adjoining sides of bottles II and III are similar holes, all arranged to correspond with each other.

A soft rubber washer separates the bottles at the holes, making a water-tight joint, and also acting as a support to hold in place a thin film of gold-beater's skin, through which the liquids must pass by the process of endosmose and exosmose, from one bottle to the other.

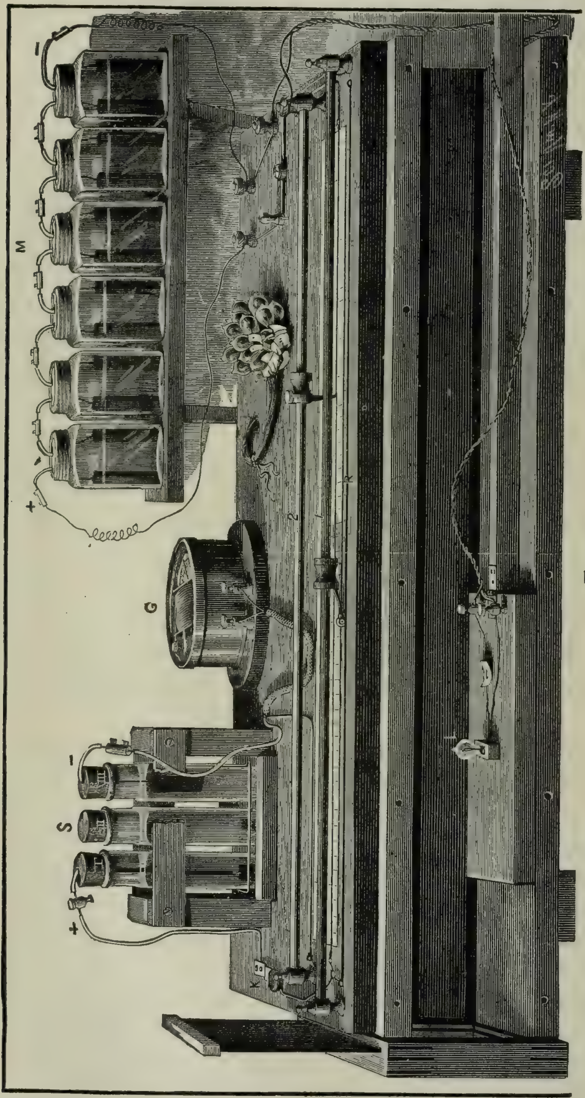

FIG. I.

All of the bottles are filled with a dilute solution of sulphate of zinc; within bottle I is placed a piece of sulphate of copper about the size of a pea, which changes the solution to a blue color; the copper electrode at the bottom is connected by an insulated wire, which passes through the cork to the back of the key, K. At the bottom of bottle II is a small chunk of zinc, which collects any deposit of copper, should any pass through from bottle I.

In the top of bottle III is suspended the zinc electrode, which measures about 1$\frac{1}{8}$ in. long by $\frac{3}{4}$ in. wide and $\frac{1}{8}$ thick: its conducting wire as shown passes directly to the galvanometer, G.

It will be noticed this arrangement gives a very constant battery which can not polarize, as each electrode is completely isolated, and the separation of the bottles with the gold-beater's skin also prevents an easy mixture of the solution. Each electrode is never endangered, but is kept immersed in a solution favorable to retain it in perfect condition.

The main or Fuller battery, M, has been somewhat modified, but consists of a zinc electrode inserted in the porous cup, in which has been placed a teaspoonful of mercury and a dilute solution of sulphuric acid and water.

In the glass jar are four carbon rods about one inch square, arranged to fit in each corner of the jar, connected by a ring of wire at the top to one conducting wire, which passes out through the top of the cell. The jar is filled with the usual bichromate of potash solution, known as electropoin. A metal screw cap secures a rubber cover to the top of the jar, and thereby prevents the evaporation of the solution. Six cells are employed, and are plainly seen, located on a shelf at the right, in Fig. 1.

The amount of resistance inserted in the series is a trifle more than the resistance of the lamp while hot, and consists of a length of $5\frac{1}{2}$ feet of German silver wire $\frac{15}{1000}$ of an inch in diameter, divided into equal sections connected together at one end, as seen in the diagram of Fig. 2, near the key, K, by a metal link. One section lies upon the millimeter scale parallel with and directly under brass rod No 2; the other also lies on the board under brass rod No. 1. The section of resistance wire under rod No. 2 is electrically connected thereto by a hinged metal pointed foot and adjustable collar, which may be adjusted to any point on the rod over the millimeter scale, and is secured by a set screw. The position of this collar is never changed except when a new lamp is to be inserted in the circuit. The section of resistance wire under rod No. 1 is electrically connected to the latter by a sliding collar provided with a spring, at the end of which is a grooved brass wheel about $\frac{3}{8}$ of an inch in diameter, which bears directly upon the wire.

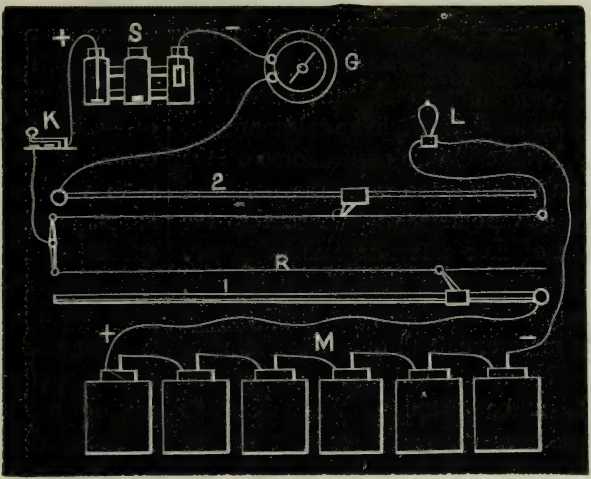

FIG. 2.

In the diagram, Fig. 2, the arrangement of the apparatus will be seen more clearly. S represents the "standard battery," G the galvanometer, No. 2 brass rod with fixed collar, No. 1 brass rod with movable collar, R resistance wire, which also connects with wire under rod No. 2, K key in the circuit of standard battery, L the electric lamp.

In order to intelligently understand the operation, we will detail the two different circuits of the batteries.

The circuit of the Fuller battery, M, is from the positive or carbon pole of the battery to brass bar No. 1 (see Fig. 2), through the collar, spring, and wheel to the German silver wire, R, to the lamp, L, and then backto the negative or zinc pole of the battery. It will be seen that by sliding the collar on rod No. 1 the amount of resistance in this circuit is easily increased or diminished.

The circuit of battery S is from the positive or copper pole through the key, K, to the resistance wire, R, thence through the pointed foot and fixed collar to brass bar No. 2, through the galvanometer, G, and back to the negative or zinc pole of the battery.

In the lamp circuit a switch is inserted for turning the current on and off when testing.

It will be noticed that there is a section of the resistance wire, R (the amount between the end connecting with key, K, and the pointed foot under rod 2), through which the current from each battery flows; and although the current from the main battery, M, has a circuit independent of the galvanometer, it is in this section of wire that both currents are brought into juxtaposition and the electro-motive force of the main battery compared with that of the constant battery, S. The variation is at once noticed on the galvanometer, and is easily regulated, as will be hereafter described.

In operating the lamp, the switch in the lamp circuit is first turned on, then the key, K, is pressed, which brings the current of the standard battery, S, into opposition to the current from the main battery, through the galvanometer, G. If the electro-motive force of the main battery is too weak, the needle of the galvanometer will be sent to the right of zero a few degrees by battery S; but such movement is at once overcome by diminishing the resistance in the main circuit through the sliding of the collar on rod No. 1 toward the left, in the direction of key, K. As quickly as the resistance is cut out by this movement, so is the needle of the galvanometer forced back to the left until it reaches the zero point; then the batteries are exactly balanced, and the light obtained is equal to that of a standard candle; at this zero reading we have also a constant number of volts of electro-motive force.

A bunch of twenty lamps accompany the apparatus, and may be seen resting upon the base board near the galvanometer. Although all of the lamps may possess the same electrical resistance, they will not emit an equal amount of light; hence in inserting a new lamp it is necessary to locate the hinged pointed metal foot under the brass rod No. 2 at a different point on the millimeter scale, to correspond with the number marked on the label attached to each lamp.

The mode of testing the candle power of each lamp is to first set the hinged pointed foot arbitrarily at some number on the millimeter scale, then to turn on the switch of battery, M, and gradually slide the wheeled collar from the extreme right hand end of rod No. 1 to the left until enough resistance is cut out to make the intensity of the light from the lamp equal the light of a standard candle, and at the same time to see that the reading of the galvanometer is zero.

The average of a large number of photometric readings is taken to determine the uniformity or the intensity of light emitted from the standard candle.

In view of the differences in the lamps, each one is marked with a special number, which is the separate test, as was shown on the millimeter scale when it was originally tried, and is to be used when the lamp is put into the main circuit of battery, M, in the manner previously described.

The electrical standard of light thus obtained is far more constant and reliable than that obtained from the standard candle, in that all variation of the flame or the uncertainties of the wick are avoided. The galvanometer employed is of the ordinary pattern, having an estimated resistance of about 500 ohms.

As soon as any blackening occurs on the interior of the globe, or even before it, which is due to the gradual destruction of the carbon film from long use, the lamp is removed and a new lamp substituted.

The lamp when employed in making the photographic tests is used but a few seconds at a time, and it is estimated one lamp will, on this account, be good for several thousand tests before the variation of the light will amount to more than one per cent.

Much credit is due to Mr. Edison and his assistant in working out the practical details of the apparatus, and the simplicity and delicacy by which the resistance is employed to control the current of the variable battery is especially commendable.

So delicate is the balance that the resistance of a quarter of an inch of the resistance wire can be read on the galvanometer.

The application of the light in testing the sensitiveness of photographic dry plates may be described as follows: A sensitive dry plate is placed in contact with a Woodbury carbon screen (see Fig. 3) such as is used in a Warnerke sensitometer, in a plate holder, and the latter is set into a groove at one end of the testing box, the slide protecting the plate from all light, then being withdrawn, as shown in Fig. 1. The electric lamp is then placed so as to be opposite the center of the screen and twenty-four inches therefrom. The switch putting the battery M in circuit is now turned on and the light emanating from the lamp is allowed to act upon the screen for twenty seconds; it is instantly stopped by turning off the switch.

The sensitive plate is next removed from the plate holder and placed in a developing solution of a given strength for five minutes, and it is then taken out, washed, and immersed in a fixing bath of hyposulphite of soda until the bromide of silver film unacted upon by he light is dissolved out. It is again washed, and when dry is laid film side down upon a piece of white paper. The highest number on the finished negative which can be seen represents the sensitiveness of the plate, and by means of comparative tests the relative sensitiveness of different plates is thus easily determined.

It should be mentioned that the Woodbury screen (Fig. 3) is a plate of glass coated with a film of carbon tissue divided into squares, and is made by exposing the sensitized tissue behind another negative screen having similar squares for a certain number of minutes to the light of the sun, and afterward developed, by dissolving out, with hot water, the parts of the film unacted upon by light. Each square is shaded to be a trifle more dense than its neighbor, and they are distinguished by numbers.

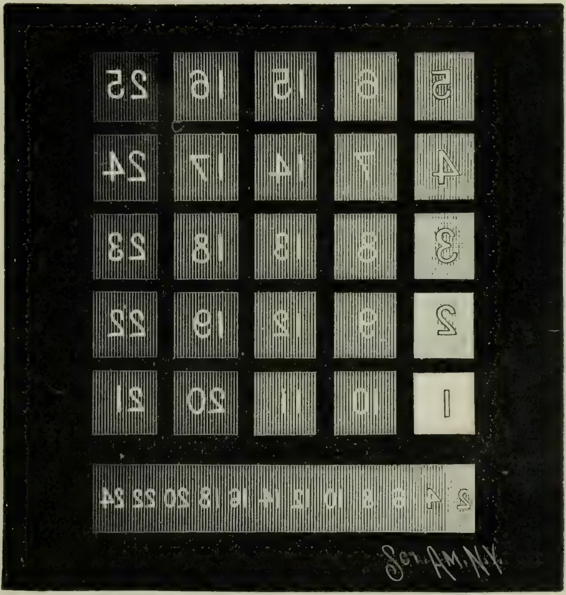

FIG. 3.

No. 1, it will be noticed, is quite transparent, while No. 25 is nearly opaque. The row of figures at the bottom is intended to show in a more compact way the difference in the shading.

A sensitive plate showing a reading of 25 will be regarded as having an extreme degree of sensitiveness, and, other things being equal, such as freedom from fog in the film, will be excellently adapted for taking instantaneous pictures. One showing 14 would be considered very slow, but excellent for copying or for ordinary landscape work. Nearly two hundred tests have been very successfully made with the lamp, and it forms a valuable addition to the photographic laboratory. In addition to its application to photography, the light may be used for many other purposes, such as comparative photometric tests with other kinds of illuminants. It forms a ready and convenient standard for use in the laboratory, or even for use in gas works, and is an improvement which has long been sought for.

Mr. Edison and the Society of Amateur Photographers are to be congratulated on their success in at last having found a practical method for the more exact measurement of light. It is a matter of scientific interest to the community at large, and is well worthy of the attention of all who are in search of a standard light.

◆

PHOTOGRAPH GALLERIES AND INSURANCE.

We have had our attention called to the fact that the rates of insurance on photograph galleries are extra high. We presume this is owing to the idea of there being much alcohol and ether used. But in these modern times we should think that the use of dry plates would make the fire risks less, and there should be a corresponding reduction in the fire insurance premiums. If some organized effort was made, and the attention of the fire insurance companies was called to the changes in the modern methods of photography, we feel sure that some reduction could be obtained over the present rates of insurance.

Would it not be a good topic to discuss at the coming convention of the Photographers' Association of America, at Buffalo. If the matter is properly discussed in the early part of the sessions, and a committee appointed, a petition to the various insurance companies could be formulated before the Association adjourns. We know of no topic of more practical importance to professional photographers.

◆

TO OUR SUBSCRIBERS.

There are several items of interest to our subscribers to which we particularly wish to call their attention :

1st. No communications can be answered unless we receive the name and address of the correspondent. And no questions of a technical nature can be answered except through the columns of the Bulletin.

2d. All communications for the columns of the Bulletin should reach us on Monday preceding the date of issue, in order to appear at that time.

3d. We do not illustrate *every* number of the Bulletin, only *every other number*, the first issue of each month.

4th. The Bulletin is published *semi-monthly.*.

◆

All communications for the columns of the Bulletin *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

Just read another copy of your Bulletin, and after careful reading I am more than ever convinced that it is the magazine for the practical photographer. Success to you.

Yours, etc.,
F. E. Poister.

[*From the Photographic News.*]

A NEW DEVELOPER CONTAINING SULPHITE OF AMMONIA, WITH A NOTE ON THE LIME DEVELOPER.

BY DR. JOSEPH MARIA EDER.

I HAVE fully recognized the value of the potash developer for rapid plates and short exposures; but notwithstanding this, I now advocate a fresh developer containing ammonia and sulphite of ammonium, this developer having proved excellent with almost all kinds of commercial plates.

A.—Dissolve 10 parts of pyrogallol, and 25 to thirty parts of sulphite of ammonium, in 100 parts of water.

B.—Dissolve 5 parts of bromide of ammonium in 150 parts of water, and add 50 parts of liquid ammonia.

The working developer is made by mixing 100 cubic centimeters of water, 4 c. cm. of the pyrogallic solution A, and 4 c. cm. of the alkaline solution B. Development takes place very quickly, and if it is desired to make the reaction slower, more water (50 c. cm. extra) is added. This leads to the production of softer pictures.

If, on the other hand, more vigorous images are required, a few drops of a ten per cent. solution of ammonium bromide must be added.

The ammonium sulphite developer gives very well-modeled, brilliant negatives, in which the high-lights are well rendered, and the deep shadows are full of modeling, while the negatives have an agreeable dark-brownish tint.

The ammonium sulphite makes the aqueous solution of pyrogallol more permanent than when the sodium sulphite is used, and there is but little liability to fog with it.

A Developer with Lime Water.—Pyrogallic acid and lime water were first recommended by Davanne for collodio-bromide emulsion, and this developer can also be used with gelatine emulsion plates.

As lime is but slightly soluble in water, it is convenient to make a ten per cent. solution of sugar in water, and to saturate this with slaked lime.

The pyro-lime developer becomes violet and brown in use, also becomes turbid; while the developed images produced are so thin that I do not think very much of this developer.

OBITUARY.

THE RIGHT HON. GEORGE SWAN NOTTAGE.

THE English photographic world has lost one of its most energetic members and one of its best patrons of the fine arts in the death of Mr. George Swan Nottage, the late Lord Mayor of London. The following items from recent English papers are of interest :

He was descended from an old family, the Nottages of Nottage in Glamorganshire, but who were subsequently located in Essex. He was also a nephew of the late Alderman Challis, who was sheriff at the same time that his other uncle, Mr. R. W. Kennard, held a similar office. The last named gentleman was a partner in the firm of Kennard & Co., ironmasters, and in early life Mr. Nottage was engaged with that firm. He remained connected with the iron trade for twenty years, but it was not a congenial pursuit. From his earliest years Mr. Nottage evinced a taste for the fine arts, and the stereoscope having then been invented, he saw that by this instrument, in connection with the undeveloped art of photography, if brought out on commercial principles, a large and lucrative business might be established ; and he at once threw his energies into the new enterprise, under the title of the London Stereoscopic Company. Mr. Nottage was not unknown as a writer, having produced a volume of "Sketches of Character," a Shakspearean Diary, and letters on the grand jury system. He was possessed of considerable property at Brighton, particularly in the King's-road, where he carried out great improvements and erected handsome buildings.—*St. James's Gazette.*

The death of the Lord Mayor, Mr. Alderman Nottage, at an early hour this morning, will be received with feelings of universal regret. He had been suffering for the last few days from an attack of bronchitis, but no fatal termination of his illness was anticipated until a few hours before he passed away. Mr. Alderman Nottage had already won golden opinions in the office of Chief Magistrate of the city. As a magistrate he was eminently judicious, and did honor to the bench. He upheld, too, most worthily the hospitalities of the Mansion House, supported by a lady who was much beloved in city circles, and was the most popular of Lady Mayoresses. Mr. Alderman Nottage was well known for his courteous and charitable disposition. He was a man of considerable taste, a discriminating patron of art, and it is not too much to say that his place will not be easily filled in the City of London. For many years he was at the head of the well-known London Photographic and Stereoscopic Company, the largest establishment of the kind in the world. He leaves to lament his premature loss, at the comparatively early age of fifty-seven, a widow and two children, a daughter married to a member of the well-known firm of Messrs. Palmer, of Reading, and a son who is a member of the bar, and who has rendered invaluable help to his father during his brief months of official life.—*London Evening News*, *April* 11.

OUR ILLUSTRATION.

THE picture with which we illustrate this issue of the BULLETIN is a reproduction by the Photogravure Company of the "presentation print" of the Society of Amateur Photographers of New York. The original picture was a five by eight print from a negative by Mr. Randall Spaulding, of Montclair, N. J., taken on a Carbutt Special Plate. As Mr. Spaulding is a member of the above Amateur Society, the picture shows what beautiful and artistic work this organization is fostering amongst its members.

A CORRECTION.

IN Dr. Laudy's article in last issue a bad misprint occurs near the end of the paper on page 235. In giving the "time" of the Prosch shutter the fractions should read $\frac{1}{25}$, $\frac{1}{32}$, $\frac{1}{56}$.

[*From American Monthly Microscopical Journal.*]

STAINING TISSUES FOR PHOTOGRAPHY.

BY GEORGE A. PIERSOL, M. D.

SATISFACTORY results in photographing histological tissues depend largely upon two conditions:—

1. Having a section so thin and even that little more than a single layer of cells is included.

2. Having such thin section properly stained—especially sufficiently differentiated.

Regarding the first condition, but little difficulty is experienced in these days of sliding microtomes, whose advent has marked a new era in section cutting.

The successful completion of the second condition for photography is not always as readily accomplished. By most workers, probably, the stains ordinarily employed and valued for general use are borax-carmine and hematoxylin; of the two, the latter is usually the more highly prized—the simple manipulations required and the unsurpassed results justly giving hematoxylin a recognized pre-eminence.

These sections stained with borax-carmine (properly used) yield often excellent negatives, in their strata the red color being sufficiently non-actinic to give a vigorous contrast on the plate. In well-differentiated carmine staining, however, little else than cells is colored, and frequently delicate details of the connective tissues are wanting on account of their transparency.

Hematoxylin stainings, in very thin sections, while all that can be desired under the microscope, are usually very disappointing when photographed; the delicate layer of tissue offers almost no actinic contrast when mono-chromatic sunlight is obtained by the ammonio-sulphate of copper cell.

Since hematoxylin is so extensively

employed in all lines of work, a ready modification of this staining to meet the needs of photography is of advantage. Such a result is obtained by a modified use of a formula of Wiegert, already commended to the readers of the *Journal* by Dr. Councilman* for the study of the brain and spinal cord. While especially intended for nervous tissues, the modified use furnishes specimens of all organs admirably adapted for photography.

No especial formula for hematoxylin is needed, using one which is capable of staining deeply and giving standard results. In the usual course of work the sections are stained; a few very thin ones, however, are allowed to remain in the solution, after those for ordinary preparation, until they are of an intense dark purple, when they are transferred, one by one, to a capsule containing a solution composed of the following constituents :

Borax	1.
Potassium ferricyanide	2.5
Water	100.

In this they are kept moving until the intense color is gradually discharged, and the purple tint is replaced by a bronze yellow, shading to saffron. Before the sections reach the latter color they should be washed in water; the further usual steps in mounting are then completed.

Sections so stained, and mounted in balsam will be found to possess all the differentiation given by hematoxylin, with a change from the purplish blue color to the subdued tones of brown—a substitution often most pleasing and grateful to the eye.

While in general appearance these sections resemble successful Bismarck brown staining, there are differences in color, the modified hematoxylin possessing a peculiar grayish brown tint, in addition, the differentiation being better marked, and much more readily obtained than with the Bismarck brown, which is sometimes rebellious.

For photography, these modified stainings are well adapted, since the thinnest possible layers are sufficiently non-actinic to yield a vigorous picture. A comparison of the results obtained from delicate sections stained with carmine or hematoxylin, as usually employed, and ones colored as suggested, will convince that in the modified hematoxylin we possess a really useful and very convenient method of preparing tissues for photography.

THE BEHAVIOR OF THE HALOID SILVER COMPOUNDS IN THE SOLAR SPECTRUM.

(*Continued.*)*

BY DR. J. M. EDER.

Cyanin, with bromide of silver gelatine is a very good sensitizer for orange and red, as discovered by me and *Schumann* at about the same time. This applies above all to the Iodo Cyanin, that is the ordinary Cyanin (Chinolin Iodo Cyanin)[1]. At short exposure near the strong blue action there is also obtained a less powerful action between D and C (D ⅓C to D ½ C), while in green and yellow only little of a darkening coloration can be observed (curve 14). Under longer exposure this action extends from the blue part continuously to B in the red. The minimum of action is near E (F ⅔ E); then follows a weak not always easily recognizable maximum near D (E ¾ D), and the stronger one mentioned at D ½ C. But the preponderating main action takes place in the blue (curve 14), provided that no yellow glass is placed in front. Quite similar in behavior is *Chloride of Cyanin, Sulphate of Cyanin and Nitrate of Cyanin*, but the action of the Iodo Cyanin is the most favorable in regard to sensitiveness of the plates colored with it. In all four kinds of Cyanin the maximum of orange sensitiveness is at the same place. The total sensitiveness of the Cyanin plates to white light is less than that of uncolored plates

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* The Microscopic Investigation of the Brain and Spinal Cord, vol. v., p. 201.

* The curves referred to will be found in last issue of the BULLETIN —EDS. BULLETIN.

[1] Neues Handworterbuch der Chemie, vol. 2. page 553.

(probably $\frac{1}{10}$ or $\frac{1}{15}$), but the relative orange sensitiveness is more than a hundred times larger. When working with them, *subdued* dark red light should be always used, and the work should be done as much as possible in the shadow.

SCHUMANN recommends to subdue the red light by brown paper, which I found to be very practicable.

If a little Ammonia is added to the Cyanin with which the emulsion is colored[1], the maxima of action will appear stronger.

Eosine and all *eosine colors* derived from it are very good sensitizers for green, yellow-green, and eventually for yellow. With these coloring matters the action of the optical sensitizers is not difficult to study, and can even be shown in diffused daylight.

Brom-Eosine I tried in the following kinds found in the market: *Eosine yellowish* or *Eosine J.*, *Pyrosine J.*, *Erothysine yellowish.* With short exposure all gave near the ordinary bromide of silver spectrum, a maximum action of the coloring matter between E and D (E ½ D), while between E and F no action can be observed (curve 15). With longer exposure the maximum grows in the yellow-green. The action extends rapidly, fading off to D, while on the other side the curve falls also toward E, and reaches a minimum between F and E (E ½ F, curve 15). An addition of ammonia in the above-mentioned quantities increases the action in yellow green; the maximum appears more intense, and right and left from it the action is also a little more visible. At the same time a second weak maximum of the coloring matter action at E, which otherwise is hardly recognizable, appears a little more distinctly (it is in curve 15).

The bluish shades of Eosine colors have an absorption band in the yellow. In accordance with this the band of the optical sensitiveness lays also nearer the line D. This applies to the *blue shade Eosine* (Eosine B), and the bluest of all kinds of Eosine, *Bengal rosa*[2], whose action I made known for the first time in April, 1884, in a preliminary communication.[3] The spectrum of Bromide of silver gelatine containing Bengal rosa shows curve 16 with short and long exposure.

In presence of ammonia the maximum appears much stronger at D; the action then extends, provided the exposure be sufficient, further toward the less refractive rays.

Between the main action in blue and the weaker maximum at D there appears a less distinct one at E, which restricts the change of action in yellow and blue.

The other Eosine colors also proved optical sensitizers for yellow-green and yellow, namely, *Methyleosine* (*Methyl Erythrin*), *Ethyleosine*, *Phloxine* (Potash salt of the Tetrabrom-Dichlor fluorescein), *Cyanosine* (Methyl ether of Phloxine), *Aureosine* (Chlorfluorescein) and *Safranine* (Brom-nitro-fluorescein). The sensitizing band lays between that of eosine and rose Bengal, according to the position of the absorption band. But the sensitiveness that can be produced is not alike in all; *e.g.*, in cyanosine and phloxine it is smaller than in eosine.

If the sunlight is allowed to pass through yellow glass or a solution of bichromate of potassium (1:1,000) before it enters the slit of the spectrum apparatus, the ultra violet as well as the largest part of the violet and blue will be weakened considerably.

By this means the relative brilliancy of the spectrum in yellow-green, yellow and orange is increased. Bromide of silver gelatine, colored in the correct manner with eosine, will thus give a spectrum picture, in which the blackening in the yellow-green surpasses that in the blue. Curve 17 represents this action. Plates which reproduce the colors in this manner can be used very well for the photography of yellow and blue colors, the yellow appearing to the human eye in about the same proportion lighter than blue and violet.

But the red sensitiveness of the eosine colors is insufficient and the green sensitiveness proportionately too large.

Curve 18 shows the spectrum picture upon a bromide of silver gelatine plate which is colored with a mixture of eosine and cyanine. The *dotted curve* 18 corresponds with an excess of eosine, the full line with an excess of cyanine.

But these mixtures of coloring matter do not show in the spectrograph the clear action of every single one. One influences the action of the other. Cyanine *and* eosine colored emulsion possesses an inferior red sensitiveness to the one colored solely with cyanine; in the mixture of both the sensitiveness for yellow-green has also much declined. Still the relative sensitiveness for the less refractive rays can be extended, by a mixture of colors, upon a larger number of different colors of the spectrum by removing the minimum of action of one coloring matter through the addition of another which has its maximum in the same place. My experiments justify the hope that in this manner a uniform sensitiveness of the bromide of silver for the whole spectrum might be obtained without the appearance of any maxima or minima.

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[1] A bath of 100 c.c. water, 2 c. c. alcoholic cyanin solution (1:400), and a little ammonia is also good.

[2] Soda salt of the Tetrajod-Dichlorfluorescein.

[3] Photogr. Correspondenz, 1884, page 95.

Aniline Red sensitizes for yellow and green-yellow. I tried chloride and acetate of *Rose aniline*, as well as Coupier's *Toluol Red*[1] with equal success.

The maximum of optical sensitiveness lays at E ⅔ D; the action extending weakly beyond D and extends on the other side, with a minimum at E, to blue-violet and ultra-violet (curve 19, fig. 9). Under short exposure—even before the action in yellow appears—the action in violet and ultra-violet will show itself slightly upon the plates colored with aniline red, and a strong blue sensitiveness appears between G and F (dotted curve 19). It seems to me remarkable that *Acid Fuchsin* (soda salt of Rose Aniline sulpho-acid) did not cause in my preparation the same sensitiveness in yellow as aniline red, but at the same time a weakening in the violet.

With *Fluorescein* and *ammonia* I obtained upon dry bromide of silver gelatine plates a sensitiveness for green to near D without the observation of a maximum appearing there (dotted curve 20), but when wet (after long exposure) a maximum of action will appear in the green, to wit: a band with recognizable maximum near E (full line curve 20). In consequence of the long exposure the picture appears very intense.

Chrysolin shows a similar action to dry Fluorescein (Benzylfluorescein) upon bromide of silver gelatine, only the action in the green is more intense and extends further into yellow (beyond D). Both coloring matters do little harm to the total sensitiveness.

Resorcein blue (Fluorescent blue)[2] upon wet plates treated with the coloring solution—I obtained only a sensitiveness, although small, which extended to C (curve 21). At short exposure the action in the blue appears (similar to that in Aniline red) particularly strong, because the action of the ultra-violet and violet is reduced.

Corallin did not always give me sure results, except the kind *Red Corallin.* This by itself as well as in presence of ammonia caused a moderate increase of the sensitiveness in yellow at D. The action extended in orange toward C and passed gradually to intense action in the blue, while a minimum appeared at E ½ D (curve 22, fig. 9). Acids reduce the action.

Naphthaline Red (*Magdala Red*) gives a strong maximum of the yellow action at D. With short exposure this maximum stands alone and the action begins again in blue-green, which extends into the ultra-violet (dotted curve 23). With longer exposure the action reaches into orange and passes with slight green sensitiveness toward the refrangible end of the spectrum (curve 23).

Blue Coupier (sulpho acid of the violaniline obtained after the nitro-benzole process) causes a sensitiveness for the less refractive rays, which is remarkable in the appearance of *two maxima*—one in green (E ⅔ D), and the other in orange (D ½ C), besides the ordinary maximum for bromide of silver gelatine in the blue as represented by curve 24. It appears possible that the Blue Coupier is not a pure coloring matter, but a mixture of two different colors.

Safranine is a good sensitizer for green. Its action with sufficient exposure extends a little beyond D. The action in the green did not increase in my experiments to a strong maximum, but runs to E, where the curve of action to blue rises quickly (curve 25). Certain kinds of *Ponceau* cause also a similar effect, *e. g.*, *Ponceau* 3 R, *Phenolponceau*, *Biberich Scarlet*[3] (the latter only in a small degree) also *Grenadine* (a bye-product in the manufacture of aniline red) which by short exposure shortens and strengthens the spectrum picture at both ends, but at longer exposure sensitizes as far as D.

Chrysaniline is a good sensitizer for green. Its action in this respect in ammoniated solution was first mentioned by Dr. Lohse.[4] This coloring matter I found also effective in a neutral aqueous solution. It changed the action of the silver spectrum upon bromide of silver gelatine colored with it, in a remarkable manner.

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[1] That is, aniline red from aniline and nitrotoluol. See Neues Handworterbuch der Chemie: Vol. 1, page 620; also M. Vogel: Die Entwicklung der Anilin-Industrie, 1870, page 177.

[2] Benedict: Die Kunstlichen Farbstoffe, 1883, page 171.

[3] Compare Neues Handworterbuch der Chemie, Bd 4, under "Naphtaline" and "Naphtalfarbstoffe."

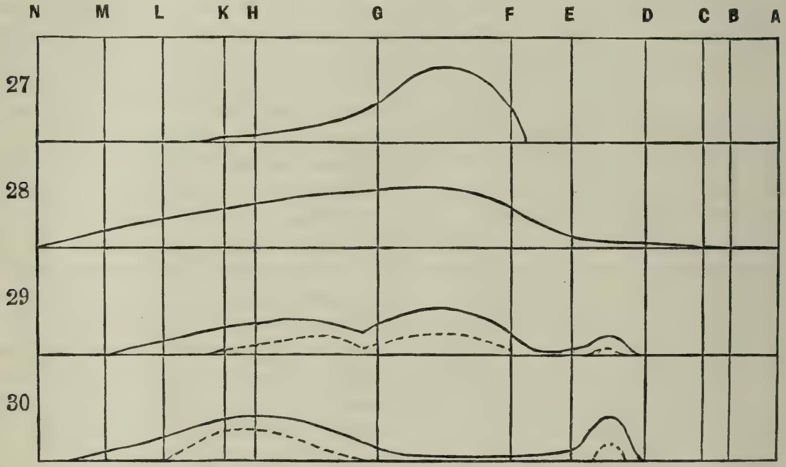
[4] Dr. Lohse found (with a concentration of 0,004 grm. coloring matter 2 c. c. ammonia and 100 c. c. water) that the following are sensitizers for green and yellow-green: Chrysaniline, Nitro chrysaniline, chloride of Diamidoazo benzol; while the following yellow coloring matters had little or no action: Ortho nitrophenol, Orthonitro aniline, Peranitroaniline, Metanitroaniline, Thymol chinon, Phenanthro-chinon, Chrysophanic acid, Tropaeolin O. O., Quercitron, Extract of yellow wood, Aloes, Diamido-benzol, Amidoazo benzol, Nitro sodimethyl-aniline, Picraminic Acid, Martius yellow, Diamond yellow, Tropaeolin J.

Photogr. Archiv. 1884, p. 221; also Photogr. Mittheilingen, vol. 21, p. 130.

The action of violet and ultra-violet sinks, an intense coloration appears in the blue at (G$\frac{2}{3}$ F), which declines gradually toward E, passes through the green and disappears beyond D. (Curve 26, Fig. 9.) Thereby the curve appears further removed toward green, compared with that of the uncolored bromide of silver gelatine. The blackening, in consequence of the sensitiveness of the chrysaniline in the green, attaches itself so closely to the normal spectrum upon bromide of silver, that no interruption can be observed; and the same is the case with chrysoline.

Many coloring matters give upon bromide of silver gelatine no distinct sensitizing maximum in green, yellow or red, but influence the spectrum picture upon the bromide of silver in the blue and violet part. For instance, the ultra-violet and violet are weakened by Acid-Fuchsin, dry Resorein Blue, Aniline Red (at short exposure), Corallin (at short exposure), and many others, yellow and red as well as violet and blue coloring matters, whereby the blue appears relatively stronger, and the general sensitiveness sinks (curve 27, Fig. 10). In this manner it appears possible to suppress certain parts of the spectrum.

Fig. 10.



Other coloring matters sensitize bromide of silver gelatine without distinct maximum for the less refractive rays. With bromide of silver gelatine plates, which have been colored with weakly ammoniated *Hamatoxyline*, ammoniated *Curcuma Tincture*, *Soluble Berlin Blue*, *Chloride of Monophenyl-Roseaniline*, etc., the action of the silver spectrum can be traced to the yellow, and further into the red (curve 28). But I never obtained that clearness in the photography of the *Frauenhofer* lines as in the application of coloring matter with a strong maximum of sensitiveness; but the picture is mostly subdued and looks as if it was over-exposed.

IODO-BROMIDE OF SILVER GELATINE AND COLORING MATTERS.

Mixtures of ready-made iodide of silver gelatine and bromide of silver gelatine give, as mentioned above, a spectrum picture, which shows two maxima (separated by a minimum); namely, the one in the violet, the other in the blue. If such films are colored with eosine or other colors, a third maximum in the yellow-green will appear at the spot characteristic for the optical sensitiveness. Curve 29 (Fig. 10) shows the spectrum picture upon iodide of silver and bromide of silver colored with eosine. The maximum of the eosine action lays between E and D, exactly at that place where it is found with pure bromide of silver gelatine, and there is only one *single band* in the place of the optical sensitiveness, which in no place is interrupted by a minimum. Near it appears the characteristic spectrum picture upon iodide of silver and bromide of silver in the blue part, so that three maxima are present. The other coloring matters act in a similar manner.

Iodo-Bromide of Silver Gelatine, where both maxima pass into each other by digestion (see curves 7 and 8, Fig. 7), has the maximum of this optical sensitiveness caused by coloring matters, and in the same place as bromide of silver gelatine. With bromide of silver containing ⅓ per cent. iodide of silver the action of the coloring matter is not visibly modified. But if the proportion of the iodide of silver increases from 10 to 30 per cent., then the coloring matter will no longer sensitize so powerfully for the less refractive rays as far as examined by me.

SCHUMANN observed that pure iodide of silver gelatine cannot be sensitized for yellow-green by eosine, which is so easily successful with bromide of silver; this condition of the iodide of silver explains the above-mentioned appearance.

Chloride of Silver Gelatine is sensitized strongly by eosine, cyanin, and other coloring matters acting on the bromide of silver. The maximum of the color action lays also in this case at the same place, as with the bromide of silver gelatine. Thereby comes the spectrum in the violet part to act in the manner characteristic of chloride of silver. Curve 30 (Fig. 10) shows chloride of silver gelatine colored with eosine. At short exposure (dotted curve 30) a maximum appears at H, the beginning of the ultra violet; in the blue and green there is no action observable, but at E ½ D the eosine action appears powerful. At longer exposure a weak action runs through blue and green to the yellow, where a maximum sensitiveness appears, surpassing that of the violet.

Mixtures of *Iodide of Silver with Chloride of Silver Gelatine*, as well as *Bromide of Silver* with *Chloride of Silver Gelatine*, act towards coloring matters in a way analogous to iodide of silver mixed with bromide of silver. Chloride of silver with 10 to 30 per cent of iodide of silver gives, after an addition of eosine, clear and strong pictures with very strong relative sensitiveness in yellow-green, which mostly surpasses the colored bromide of silver.

(*To be continued.*)

A DESTRUCTIVE FIRE.

IN our last issue we called attention to the loss of the fine store of Messrs. Smith & Pattison, of Chicago, which was totally destroyed by fire on April 14. Since that time we have obtained the following interesting particulars from the firm and also from a notice in the *Picture and Art Trade :*

The conflagration was started by the cracking of a bottle of wood alcohol by one of the employees when sweeping, and not noticing the break, he let it stand so that the contents were steadily running out upon the floor unnoticed. Mr. Smith on entering the room at once detected the fumes of the alcohol and set about the discovery of their origin, and knowing that that article was kept in a dark place under the counter, proceeded to the spot and lighted a match to enable him to see the condition of things and remedy the evil, and stooping down with match in hand, a combustion at once took place, which it was impossible to control.

Mr. Smith is confident that he did not bring the flames of the match in contact with the alcohol on the floor. His supposition is that a small spray of the fluid was shooting out through a crack in the bottle which he did not discover till it came in contact with the match, which caused the whole to ignite, and as the most combustible goods in the house were in close proximity to the flame thus started, in a few seconds' time it became wholly unmanageable and was beyond the control of those striving to stifle it, and such was the rapidity with which it sped that but two of the inmates escaped with hats and coats, Mr. Smith being compelled to lower himself to the ground by means of the elevator at rear of building. Their entire stock was completely consumed by the flames, together with the morning mail, which lay unopened in the office. The safe had luckily not been opened when the fire occurred, and the books of the firm were saved, but a large number of memorandum books, letter files, catalogues, and in fact all the numberless papers and various documents which usually fill the office desk and which are almost invaluable, were lost, with the entire office outfit and quite a number of unfilled or partially filled orders, etc.; in fact, nothing was saved from the office.

Nothing daunted by their mishap, the firm at once made arrangements with their neighbors for what supplies were needed, and all orders were shipped as promptly as if nothing had occurred.

Goods were ordered at once by telegraph from Eastern importers and manufacturers by fast freight, and in twenty-four hours after the fire occurred forty-eight cases of goods were started from New York, and every effort made by both shipper and transportation company to hurry goods through, so that by the 20th of April they had the beginning of what, in a very short time, will be the freshest, choicest and largest stock of photo goods west of New York.

This firm, although of but one year's standing, are rapidly gaining eminence and popularity.

We are glad to hear that Messrs. Smith & Pattison have secured some nice large rooms at 145 and 147 Wabash avenue, and by the time this meets the eyes of our readers will have completed the acquisition of their fresh stock of goods.

Their losses will probably reach thirty-five thousand dollars.

EXPOSITION JOTTINGS.

[*From our Special Correspondent.*]

Again resuming our description of the photo section at the great Exposition, we come to another large exhibit, also occupying nearly 500 square feet.

It is from the studio of Mr. Gutekunst of Philadelphia, one of the best known and most admired photographers in the United States. This exhibit combines portraits and views, of which a large number are phototypes; and the artistic quality of the work is so excellent that of either class any photographer in the world might well be proud.

I have always noticed in the work of Mr. Gutekunst a pervading quality, which is more impressive when a number of pictures are seen together, as here, and which can be best expressed by saying they give the feeling or impression of a grand repose.

And by "repose" I mean something far removed from mere stillness or keeping quiet.

I mean that lofty tranquillity of demeanor when the mind is free from uneasy self-consciousness and occupied with thoughts that cheer and elevate.

It cannot be mainly because he has a high class of intelligent people as sitters—although he has had the honor of lighting and posing some of the greatest men and most beautiful women in America—but it seems that under his skillful treatment every one, even the noblest, gets some addition of grace and dignity.

We instinctively feel, as we look at these portraits by Mr. Gutekunst, that these positions were arranged without fuss or hurry.

We feel sure that each sitter was treated with quiet decision, equally without fidget or hesitation, and all needed arrangements made with such masterly skill that something of the calmness born of conscious power was transfused to them, until all the littleness and worry faded away, and what was best and noblest in each face came tranquilly forth to be portrayed at the artist's will.

You will smile when I say that even the buildings in Mr. Gutekunst's views, such as the U. S. Capitol and Public Buildings, seem to stand forth with a loftier beauty than in other hands; but it is true, as witness his phototypes, or, better still, his large transparencies, perfect and lustrous as gems, and then admit that I only speak "the words of truth and soberness."

But Mr. Gutekunst's large view of the Philadelphia Centennial, which claims, in the margin, to be the largest photograph in the world on one entire sheet, though from several negatives, is now surpassed in size by views of the Capitol, now on exhibition in the Interior Department, which are larger and claim to be each from one contact negative.

The next two exhibits are not large, about equal in size and in merit, and the artistic work of either need not fear comparison with any in the Exposition.

They are the exhibits of Mr. Henry Doerr of Louisville, Ky., and of Mr. C. W. Motes of Atlanta, Ga. These portraits by Mr. Doerr prove him an experienced artist throughout a variety of sizes and styles. His positions have a marked individuality of treatment, and show that he does not make pictures in any hap-hazard fashion, but has distinct and positive ideas, and works up to them. A card attached states that this exhibit by Mr. Doerr has received the first prize twice at other expositions near his home.

This shows that he is favored with a high degree of local appreciation, which he undoubtedly deserves.

Mr. Motes, whose frames hang adjoining, has excited much attention lately by his remarkable staturesque effects from living figures. Some of these form the most striking part of his exhibit, and the artistic skill with which the drapery is arranged to give the texture and solidity of marble, the management of lighting and chemical effects to aid the illusion, that the classic forms are products of the sculptor's art, and not living and breathing people, shows how perfectly Mr. Motes has formed his ideals, and how thoroughly he comprehended the resources of photography he could draw upon to realize them.

One other exhibit by Blanks, of Vicksburg, completes the contribution of American professional photographers to the photo section, except a few transparencies. Mr. Blanks' exhibit comprises both portraits and views, and in each shows a treatment above the common, in that both classes have remarkable strength and vigor.

In fact, they carry the contrast between lights and shadows as far as it can be carried by photography, without producing hardness and harshness, which they still avoid.

This characteristic brilliant effect prevades his entire exhibit, and shows that it is not casual, but his fixed ideal of good photography.

He has a number of excellent portraits of eminent Southern gentlemen; also, he has some instantaneous views, showing how great vigor and excellent detail are compatible with extreme rapidity. One picture among them excites especial attention among those who understand the difficult problem it deals with. It is a full length 8 by 10 photo of an old man, sitting out-door in shirt sleeves, with slouch hat on, in strong sunshine; part of his face heavily shaded by the hat, yet all well delineated, both in lights and shadows, from the strongly illuminated white shirt to the wrinkled and expressive old face. The whole exhibit is fine and attracts much attention.

The exhibit of transparencies in photo section are by Gutekunst, of Philadelphia, and Scholten, of St. Lous—who has no other kind—and E. L. Wilson, transparencies of statuary from this and the old Centennial. Scholten has a large number expensively and showily framed in stained glass borders, which overpower somewhat the more delicate tints of the uncolored pictures.

The transparencies in all three exhibits are exquisitely beautful, but unfortunately the diffused light on them from all sides destroys in a measure their full effect, and they do not receive the admiration they deserve.

There are some small but excellent exhibits in photo section from foreign artists, but there are many more larger and more important pictures scattered and lost among the various foreign sections.

H. Haberlandt and Prior Graff, both of Berlin, have cards, cabinets and imperials, all good, but more especially noticeable for the fine retouching on the negatives. But as the Germans gave the initial impulse to negative retouching, it is but natural they should show superior skill therein.

Edm. Gaillard, of Berlin, has a sample of Heliochromographie which looks like an oil painting waiting to be finished He also has an exhibit of phototypes, which seem to be examples of an excellent process for commercial work.

Lastly we have some pictures showing the effect of Dr. Vogel's new process for photographing colors in their proper tones and values. A glaringly brilliant sunset chromo, full of red and yellow, copied, as usual, shows dark, cold and gloomy, entirely different from the bright, warm color of the original, while another copy by the new method shows bright, clear and full of sunlight, as a good engraver might interpret the painting or render a natural sunset.

The process must be exceedingly valuable where a truthful representation of color values are desired in monochrome.

Our next will be a description of the amateur contribution, which is an important part of this exhibition.

NEW ORLEANS, April, 1885.

ROCHESTER PHOTOGRAPHIC ASSOCIATION.

AT a recent meeting of the Rochester Photographic Association, Mr. John E. Dumont, one of its most talented amateurs, presented a paper on dry plate developers, which is worthy of publication. It was entitled "A few hints on the developer," and read as follows:

A short time since I visited the rooms of the Society of Amateur Photographers, of New York, and while there was shown into the dark room where the committee were testing the plates of all the different makers, and I saw long shelves filled with bottles. On examination I found there were two bottles for every brand of plates. An idea struck me—is it necessary to have so many lots of developers? I say no!

I have frequently had different persons come to me and ask "Will this or that developer work on this or that plate?" and then there are others who do not stop to think whether the developer will work well or not, but use one developer for them all, and if it does fail to bring good results on some particular maker's plates, they condemn the plates, damn the maker, and never stop to think that it is the developer or themselves that is to blame.

The maker of plates knows what proportion of silver, bromides, etc., he puts into a plate, and he knows what proportions of pyro, etc., are required to develop those plates. There are some plates that will develop with half a grain of pyro, while others require as many as five or six grains.

Now to those who desire to produce the finest results, I would recommend that they always use the formula that the maker furnishes. Some of you will say, I am constantly changing plates, or I use one brand of plates for a certain class of work, and another brand for a different class, and cannot keep as many developers. To those persons what I have to say applies.

The iron developer has gone out of use excepting for lantern slides and transparencies, so I will confine myself to the developers now generally recommended by most dry plate makers. Pyro made alkaline by a greater or less quantity of ammonia, carbonate of potash, or washing soda and restrained with more or less bromide of ammonia, or potassium. Citric acid and sulphite of sodium do not aid development, only in so far as they preserve the pyro. Citric acid prevents decomposition of the pyro, and should in all cases be dissolved before adding to the pyro, as I find it has no effect unless it is dissolved first. Sulphite of sodium prevents oxidation of the pyro and is of but little benefit in a pyro-ammonia developer; but where potash or soda is used it is absolutely necessary, as it prevents the staining of the gelatine film, as in cases of prolonged development the film would become so stained as to be non-actinic without its use.

I would recommend to those who are using different brands of plates to make 64 grain solutions in separate bottles of pyro, stronger water ammonia, carbonate of potash, and bromide of ammonia or potassium, always adding 60 grains of citric acid and 4 ounces of sulphite of soda to each ounce of pyro.

Now each ounce of developer recommended by the following makers contains the quantities of pyro ammonia or potash and bromide set opposite their names. I have only figured out a few of the Rochester makers, as that is sufficient to illustrate.

	Pyro.	Ammonia.	Bro.	Potash.
Eastman....	1⅔ gr.	1⅞ min.	¼ gr	
Forbes......	1⅔ "	1⅞ "	¼ "	
Inglis.......	2¼ "		1/12 "	6¾ gr.
Monroe....	3⅓ gr.	3¾ min.	1 gr.	
Mawdsley...	2 "	3 "	1 "	
" ...	2½ "		¼ "	5 gr.

Make up to 4 ounces.

To use the Mawdsley plate I take of pyro 1 dram, ammonia, 1½ drams, and bromide ½ dram, adding water to make up to 4 ounces, or if I want the potash, I use pyro, 1¼ drams; potash, 2½ drams; bromide 7 min., adding water to make up to 4 ounces.

I recommend 64 grain solutions, as they are simpler to work. Each dram contains 8 grains. I think all makers should give the strength per ounce of their developers.

To amateurs who use but small quantities of developer, I would advise that they mix no more of the pyro solution than will last them ten days, as my experience is, that where sulphite of soda is used, it causes the pyro to decompose much more rapidly than where citric acid alone is used. I recently condemned a lot of plates because of their slow development, but later on tried the same emulsion with a fresh pyro mixture, and they flashed up quickly, and what I had called a very slow plate with an old developer was a very rapid one with a fresh developer. I have since used my old pyro solutions as a retarder in case of over-exposure, and find it is better for that purpose than bromides.

In closing I would say, always use the developer that the maker recommends. Always keep your solutions fresh and trays clean, and never condemn a plate until you are sure the plate, and not yourself, is at fault.

Regular meeting April 6, 1885.

PRESIDENT WARDLAW in the chair. Minutes read and approved.

Under the head of discussion of photographic subjects Mr. WILLIAMS reported in regard to his tests of bromide of ammonium and bromide of potassium as restraining agents, showing samples of negatives with each restrainer, and reported in favor of bromide of ammonium as the stronger agent.

Mr. INGLIS suggested that a note be made in regard to time of appearance of high lights. He was strongly in favor of gradual and continuous development either with the wet or dry plate. He thought the gradations much more fine.

Mr. WARDLAW agreed with Mr. Inglis "that the race was not always to the swift."

Mr. INGLIS thought this point identical with wet or dry plates.

Mr. WARDLAW, in support of his theory

that dry plates kept better in a damp place, produced a plate that showed marked signs of fog, except where it had been kept moist.

Mr. DUMONT suggested that a little hypo in the developer would clear fog, and thought that the water might have taken the hypo from the paper mat.

Mr. INGLIS said that, agreeable to a suggestion made some time ago by President Wardlaw, he had taken an exposed dry plate that showed signs of fog, and immersed it in a weak solution of hypo before development, and then found on development that the fog was entirely destroyed.

On the subject of the best reducer for gelatine negatives Mr. Wardlaw suggested nitric acid and permanganate of potash.

Mr. INGLIS offered Newton's formula of citric acid and bi-chloride of iron.

Mr. WARDLAW thought a negative reduced with the latter formula had more of a tendency to go back in strength.

Mr. LEE had seen negatives too intense to be reduced by the nitric acid and potash.

Mr. BUSH had used the nitric acid and potash quite weak and had found the reduction gradual and complete.

In regard to prints turning on the surface, Mr. Fox thought that the practice of first putting them in warm water had a tendency to coagulate the albumen and retain a portion of the free silver.

Mr. WARDLAW thought the warm water expanded the paper, and the cold water then contracted it and held the silver. He advised using only cold water with the addition of a little acid to the first washing.

Mr. INGLIS thought the only true test of a well-toned print was to look through it. If it still retained the red color, then tone further. He thought prints should be toned, as plates are developed, by looking through them.

The committee on lantern exhibition reported that all slides for exhibition must be handed to the committee on or before the date of the next meeting.

Mr. LEE called attention to Mr. Walker's offer of a volume of London *Photographic News* for 1884, and suggested that the association subscribe for the present year.

Mr. LEE also called attention to Mr. Walker's donation of two photographs of the moon, the frames to be presented by Mr. Gillis.

Mr. WILLIS GOVE moved a vote of thanks for the above donations. Carried.

The President, Mr. Wardlaw, presented a communication from J. Harris Stone, M. A., editor of *The Amateur Photographer*, 22 Buckingham street, Adelphi, London, W. C., England, donating to the association copies of his magazine.

A vote of thanks for the same was unanimously carried.

The following new members were elected: Mr. Lehukering, active member; Professor Charles Forbes, M.D., associate member.

The President appointed Messrs. George Eastman & Willis Gove to read original papers at the next meeting.

Meeting adjourned.

W. H. LEARNED, *Secretary.*

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Annual Meeting.

SECRETARY'S REPORT.

MR. PRESIDENT AND GENTLEMEN: It is with pleasure that I present to you this evening a report of the first year of our Society's existence, which I think you will agree in deeming a prosperous one.

Our Sociaty had its origin in a meeting held at Cooper Union on the evening of March 28th, 1884, in response to a circular sent out by Mr. F. C. Beach to those amateurs whose addresses he could secure, and published also in the journals. At this meeting there was an attendance of about seventy; and as it was evident that the sentiment was strong in favor of organizing a society, fifty-three names were signed in a book provided for that purpose, and a constitution was adopted, which, however, proved to be defective in some particulars, and was afterward amended at the meeting of June 10th, when the constitution and by-laws, as they now stand, were adopted.

Of the fifty-three persons whose names appear on the original list all but fifteen have since joined the Society.

There were on April 1st last eighty-one active members, eight subscribing members and three honorary members; ten persons have been elected who have failed to qualify, though two of them intend to do so.

One member died and one resigned during the Society year.

There have been held twelve regular meetings, seven special meetings and three field excursions, besides several informal Wednesday evening meetings.

The following papers have been read, all except two being accompanied with demonstration:

A Process of Making Gelatino-Bromide Emulsion, by A. L. Henderson, of London.

The Platinotype, C. A. Needham.

The Relative Rapidity of Lenses and the Use of Stops, C. W. Dean.

Table of Solubility of Different Chemicals, Dr. John H. Janeway.

Enlarging on Bromo-Gelatine Paper, F. C. Beach.

Making Lantern Slides, J. E. Brush.

Ou Lenses, J. T. Taylor.

The Daguerrotype and Wet Processes, L. H. Laudy.

The New Rapid Printing (Gelatino-Chloride) Paper, F. C. Beach.

There have also been numerous informal talks on different subjects, especially on developers, by Messrs. Newton and Beach, and a number of queries from the "Question Box" have furnished themes for discussion. Mention should be made of the kindness and interest in the Society displayed by Mr. John Carbutt, who has been present at several meetings and assisted in many ways the officers.

The optical lantern has been used at six meetings, four of which were devoted specially to work by members, one to slides from other amateur societies, and one to work by Mr. C. R. Pancoast, of Philadelphia.

In the way of apparatus, there have been ten different shutters, an equal number of cameras of different patterns, a drying-box for silvered paper, a changing bag for dry plates, and an incandescent platinum gas lamp brought before the Society, besides numerous devices showed by member to member.

The Society also sent a collection of seventy-five prints in six frames to the New Orleans Exhibition, where it remains up to the present, and held a competitive exhibition for the selection of a "presentation print," which was quite successful.

Correspondence with other amateur organizations has been maintained and various projects considered, among them the formation of a National Amateur Association, which has been decided impracticable; and the arranging for an exchange of lantern slides between clubs, which is in successful operation.

The work of the Dry-Plate Testing Committee has provoked considerable discussion; the results are best obtained from their special reports.

The Committee on Lenses has also been active.

Donations to the Society have been made liberally by some of the members and friends; besides those enumerated in the report of the librarian should be mentioned the enlarging apparatus from Mr. Beach, large pans and focussing stand, and supports for enlargement, from Mr. H. V. Parsell.

The regular monthly publication in pamphlet form, for distribution among the members, of the Proceedings of the Society, has recently been arranged for, and promises to be a feature of great benefit to the Society.

In concluding this report of a year, which has been successful beyond the expectations of most of those interested, there are one or two points which seem to demand more attention from members.

There seems to exist the greatest disinclination on the part of members to take any steps toward sending in specimens of their work, either for the Society's collection or for exchange. There is but a small proportion of the members, examples of whose prints are to be found in the Society's collection. There are many who have never even shown a result of any sort, good, bad or indifferent. How large a part of the prints sent to New Orleans and to the Presentation Print competition was obtained by personal solicitation only those who had the matter in charge know; and, having the interests of the Society at heart, they are not likely to tell. And it is much the same with requests for exchange; several requests have been received, and one lot of pictures for that purpose has been hanging in this room for months without, to the Secretary's knowledge, one single exchange being effected. These things are not as they should be. These are objects for the Society's attention equally with discussions and demonstrations, and it is only by properly appreciating them that the Society will gain and maintain the position to which it should aspire. This can be done only by individual effort, and it is in the hope that such effort may be stimulated that mention has been made of these matters in this place.

Respectfully submitted.
C. W. CANFIELD,
Secretary.

TREASURER'S REPORT.

GENTLEMEN: In presenting to you a statement of the financial condition of the Society for the first year of its existence, I congratulate you on the work accomplished. Starting with a membership of twenty-nine, and only $130 guaranteed to the treasury, you have pushed on to a list of ninety-one members.

The expenses of the Society have been extraordinary, and when it was decided to have rooms which we would control, with dark room and other necessaries for a meeting room, the officers found it necessary to call for a subscription. The amounts subscribed were all voluntary donations, no member being obliged to contribute. The call was generously responded to, realizing $486—one member alone contributing $200, and several others $25 each. The dark room and fitting of meeting room have cost about $350, and if to this is added the amount expended for apparatus and chemicals, we would have a total of nearly $480, which is about the amount received in answer to the call. Our rooms cost $400 a year, an expense which, perhaps, no other photographic society is under.

The total income of the Society, from all sources, has been $1,160.51, and the total disbursements $1,109.93, leaving a balance in the hands of your treasurer of $50.58.

STATEMENT.

1884–5.

To Initiation and Annual Dues, 83 Active Members	$630 00	
Annual Dues and Subscribing Members	45 00	
Subscriptions	476 19	
Rental of Lockers	6 00	
Interest on Money in Bank	3 32	
		$1,160 51
By Rent	$338 39	
Furniture	99 21	
Gas, etc	39 04	
Building and Fitting Rooms	240 16	
Stenographer	43 62	
Exhibitions, etc	52 49	
Stationary and Printing	51 30	
Postage	23 07	
Library	46 17	
Supplies	134 06	
Sundries	42 42	
		$1,109 93
Balance		$50 58

Jos. Rich,
Treasurer.

REPORT OF COMMITTEE ON BOOKS AND PUBLICATIONS.

Mr. President and Gentlemen: The Committee on Books and Current Publications take pleasure in submitting to you a catalogue of the books and periodicals in the library.

There are now seventy-six volumes on the shelves, and we have promised to us enough more to make the first hundred before the next meeting. The periodicals for last year have not been bound, because it was thought best not to draw on the treasury until the needs of more important departments of our Society had been satisfied. There are on file on the table fifteen periodicals, eleven of which are devoted to photography, and the remaining four treat of photography in its various branches occasionally. These periodicals, when bound, will be valuable additions to the library. The thanks of the committee are due to the Scovill Manufacturing Co., Messrs. E. & H. T. Anthony & Co., Messrs. Edw. L. Wilson, F. C. Beach, T. Bolas, C. W. Canfield, J. S. Rich, and the publishers of the various American and English magazines for their contributions. All the books in the library have been donated, with the exception of the two volumes of United States Patents, which were purchased at a cost of about $20.

In view of the importance of a good library to the Society, your committee would suggest that this committee be made a standing one, instead of special, as at present, and that it be composed of one member, who shall have entire charge of the books, periodicals and reading matter belonging to the Society, and shall make such rules as are thought proper, subject to revision by the members.

Respectfully submitted.
Jos. Rich, *Committee.*

REPORT OF COMMITTEE ON LENSES.

Mr. President and Gentlemen: To those members of the Society who are using detective cameras, or taking "snap" shots with other cameras, the following table will be of use, showing the number of feet beyond which everything is in focus when the equivalent focus of the lens is used. The disk of confusion is less than $\frac{1}{100}$ of an inch.

Table showing the number of feet beyond which everything is in focus when "f," the equivalent focus of lens, is used :

Equiv. focus equals.	f/5	f/10	f/15	f/20	f/25	f/30	f/40	f/50	f/60
2 inches.	7	3½	2¼	2	1½	1¼	1	⅞	¾
2½ "	10½	5½	3½	3	3⅓	2	1½	1¼	1
3 "	15	8	5	4	3½	3	2	1¾	1½
4 "	27	14	9	7	5½	5	3¾	3	2½
5 "	46	21	14	11	9	7½	6	4¾	4
6 "	60	30	20	15½	12½	10½	8	6½	5½
7 "	82	42	27	21	17	14	10¾	9	7½
8 "	107	54	36	27	22	19	14	11	10
9 "	137	68	45	34	28	23	18	14	12
10 "	167	84	56	42	34	30	21	18	15
11 "	202	101	67	51	41	37	26	21	18
12 "	241	121	80	61	49	41	31	25	21
13 "	283	142	94	71	57	48	37	30	25
14 "	328	164	109	83	66	56	42	34	29
15 "	376	189	125	95	76	64	48	39	33

Your committee desire to again call the attention of the Society to the nomenclature used by the members in referring to the apertures of their lenses. As no two makers number their stops alike, and some do not number them at all, it was voted by the Society some months ago to designate their stops in terms of the focal length of the lens. As an example of how misleading the information is obtained by giving the number of the stop, we would refer to the Dallmeyer lenses. Stop No. 3 in lens 1 A is equal to f/35 ; stop No. 3 in lens 3 D is equal to f/12.8. Here are two stops of the same number in lenses by the same maker and yet one requires eight times the exposure of the other. We are confident that the small amount of trouble caused by designating our stops in terms of f will be amply repaid by the aid it will give us in obtaining correct exposures.

Respectfully,
W. Dean,
Chairman.
Jno. H. Janeway,
Jas. B. Metcalf,
Committee on Lenses.

ABSTRACT OF REPORT OF COMMITTEE ON DRY PLATES.

Since the last regular meeting of the society the committee have made 234 tests; 28 were with Warnerke's luminous tablet, 87 with the kerosene lamp and Crooke's radiometer, 12 with a camera and 110 with the electric lamp. After giving the details of the various tests, the report goes on to say:

"We are thoroughly convinced on one point, however, and that is, that the principal cause of fogged plates is not as a general thing the fault of the emulsion, but is caused by the packing boxes and mats." Accompanying the report is a long list of the various developers used with the different plates, and tabular statements of the results obtained with the plates. Our space is too crowded to give these details, and we have given above the most important conclusions of the committee.

INAUGURAL ADDRESS BY PRESIDENT BEACH

After his Re-election.

It is with some reluctance that I accept the honor which you have so unanimously conferred upon me, realizing as I do that there are so many others much better qualified than myself to assume the duties of a presiding officer.

I have not sought the honor, neither do I think I merit it; but inasmuch as I have been elected you may rest assured that I will strive to do my duty conscientiously and work always for the best interests of the society.

It will be interesting at this time to take a look into the future and point out SOME OF THE NEEDS OF THE SOCIETY. So long as I have control I shall endeavor to keep it independent of all trade interests and influences, as it does not appear to me proper for an organization of our standing to particularly favor any single dealer or manufacturer of photographic goods.

If we are to be progressive it is necessary and right that we examine into the merits of any new invention or piece of apparatus pertaining to photography which may appear from time to time, in order that we may keep abreast of the improvements which are continually being brought forward.

I wish every member would make an effort during the new year just begun to think out or invent some better way of constructing some special piece of photographic apparatus and present his ideas to the society.

Our apparatus is at present far from being perfect; there is abundant room for improvement, and we ought to encourage inventors to show their models in order thereby to advance our own general knowledge.

One indispensable portion of apparatus, the tripod, is a continual source of annoyance; it furnishes room for a large amount of study; how to conceal or get rid of it is a puzzling question.

A plate-holder which shall be adaptable to the many inaccuracies to be found in our dry plates and capable of being easily and quickly applied to the camera is wanted.

A substitute for glass, but equal to it, as a base to support a sensitive emulsion, with which amateurs can take large photographs with little inconvenience, would be desirable.

A method of preparing ready-sensitized silver paper, on which purple tones can be easily obtained, would, in many respects, be of much value.

We are yet without a perfect shutter for instantaneous work, or a good light for the dark room.

There are many other things which might be mentioned, but what I have suggested may, I hope, suffice to awaken among you some latent inventive talent.

The number of improvements already suggested and made by some of you during the past year shows that the spirit of invention is here.

The field for inventive talent is large in view of the great variety of apparatus and applications embraced by photography.

It might be well for the society to specify two or three kinds of apparatus upon which improvements are needed, then offer rewards or prizes to the successful competitor; no doubt such a course would stimulate invention, and we would reap the advantage of whatever results might be achieved.

The cultivation of art as applied to photography, or the production of artistic photographs, should be encouraged; for instance, in taking a landscape view the subject should be carefully studied, the imagination should be brought into play as to how the finished picture will appear when reduced, the point of view should be deliberately chosen, and allowance made for the effects of lights and shades.

I am in hopes that arrangements may be made for a series of illustrated lectures upon this subject by competent authorities.

It is my opinion that every member should become familiar with the uniform system of marking the stops in their lenses as advocated by Mr. C. W. Dean last year.

It will be possible then for any one to correctly comprehend discrepancies in exposures and to converse intelligently with reference to the relative rapidity of lenses.

No better or more attractive way of presenting the results of our labors to our friends could be devised than by means of the optical lantern and lantern slides, and so we have had a special lantern constructed, which is to become the permanent property of the society. I trust the making of slides will attract the attention of a larger number of members than it has heretofore.

One of the features of the past year has been the exhibition of the very beautiful slides made by our worthy member, Mr. James Brush; his work demonstrates what can be done in this direction, and should serve as an incentive to others to strive to accomplish similar results.

For the purpose of educating those who are new in this branch of work I advise that we have special critical exhibitions of slides occasionally, in order that the defects or good qualities of the slides may be more easily pointed out.

The system of exchanging lantern slides with other clubs has been successfully inaugurated, and from the interest manifested promises to be a valuable feature of the future.

The plan enables us to see in an attractive way the work made by others and tends to promote a spirit of friendly rivalry and intercourse between the various clubs.

The extension of a similar exchange to clubs in foreign countries promises to be successfully carried out during this year, and will furnish material of unending interest.

By thus enlarging our sphere of influence and seeking intercourse with all worthy organizations devoted to the advancement of photography, in whatever country they may be located, we broaden our own ideas and gain a comprehensive knowledge of our art-science, such as it would be impossible otherwise to do.

Regarding our future, I think I am within bounds when I say no similar organization could wish for brighter prospects. Our membership, in view of the increasing general interest taken in photography, will probably rapidly augment in numbers, and it will therefore be necessary to provide larger and better quarters for our meetings and larger facilities for other work.

In order to do this in a manner commensurate with our standing as a society it would seem advisable that we first become incorporated, and afterward, if thought best, to appoint a special committee of responsible gentlemen to undertake the work of finding a suitable permanent site or building, to alter or build it in some special manner, and arrange within it a suitable meeting room, an art gallery, a sky-light, several commodious dark rooms, equipping them all with the necessary appurtenances and tools for doing good work.

By employing a good operator at a stated salary to remain in the building, to give instruction to beginners, and also to do printing, making lantern slides, enlarging, developing, etc., the services of a janitor could be dispensed with, and a large number of members could be accommodated.

Furthermore I would advocate the society keeping on hand a stock of chemicals and plates known to be reliable and of good quality, which members could purchase for their own use.

A financial plan which suggested itself to me in regard to this scheme was this, that the incorporated society might issue bonds on which to raise funds for the purchase of a suitable building; after it was once fitted up and equipped, the interest on the bonds could be met by the revenue derived from the annual dues and initiation fees, and also from the renting of the meeting room to other societies, when not in use by us.

The surplus revenue could be applied to a sinking fund to be established for the payment of the bonds. The bonds could also be secured by a mortgage on the building. Probably the annual interest charge on the bonds would not exceed the annual rent the society would have to pay for rooms, yet the facilities afforded and the inducements offered to others to become members would be increased tenfold.

The present room has been secured for another year from May 1st, but if the plan outlined meets with favor, steps toward carrying it out should be taken within a short time; it seems to me to be feasible and would meet the wants of a large number of members.

Provided with such well-equipped quarters, properly conducted, we ought to become in a short time the leading photographic society of the world, and in time be able to yield an influence in photographic matters such as few would care to contest.

It will be the intention of the management, during the new year, to present interesting subjects at meetings for the entertainment of members, and also to promote a more general discussion on photo subjects.

My impression is, a larger number of members should endeavor to take part in discussions at meetings, as it is desired that every member make known anything novel or strange which he may have seen, encountered or discovered, connected with photography.

I shall always be glad to receive suggestions from members, and if any one discovers something useful and is afraid to speak about it I shall take pleasure in doing it for him.

During the coming summer several field excursions will be projected, and it will be of special value to me if those of you who know of them will advise me of choice locations that could be visited within convenient distance of the city.

Probably a very interesting excursion for the practice of instantaneous work would be to charter a steam-tug and make a tour around the harbor among the shipping.

With so many things before us I see no reason why we shall not have a very interesting and profitable year photographically, and I trust each member will strive to do something for the society.

Thanking you again for the honor which you have bestowed upon me, I will close my remarks with the assurance that, under my supervision, no effort will be spared to make the society as useful and as interesting as it was intended it should be.

(The address was received with applause.)

After considerable discussion it was decided that a committee of three on incorporation be appointed by the President, to report at a future meeting.

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[*From The Photographic News.*]

HINTS ON POSING AND THE MANAGEMENT OF THE SITTER.

BY H. P. ROBINSON.

CHAPTER IV.—THREE-QUARTER LENGTH.—LADIES.

HITHERTO I have spoken of the sitter generically as "he," meaning, however, to include both sexes, just as women and children are included in all mankind; but as I am writing this chapter exclusively on ladies, I must alter the sitter's designation for the time being to "she." There is also the apparent absurdity, in writing on this subject, of calling all your models "sitters," although they may not want seated portraits of themselves; but the term is so generally accepted and understood to include all those who go to be represented either by the painter or photographer, that I shall continue to use it.

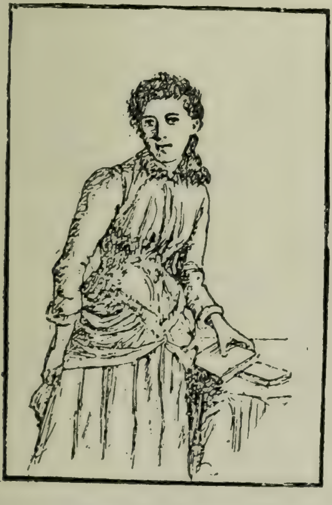
The female costume, when it suits those who order fashion to have it picturesque, offers greater facilities to the artist who desires variety in his poses than ugly masculine garments will admit of. Besides which, other reasons conduce to the making of more effective pictures when a lady is the subject. A greater range of expression is allowable, and the occupations and amusements of ladies afford many motives and much help to the photographer, while the occasional beauty of the subject encourages the operator by compelling him to make really fine pictures in spite of himself. There is a natural grace about some women and children that gives harmony to their slightest movements, and a fitness to their most trivial acts, so that if they only move across the room, the eye follows them with a similar kind of pleasure to which the ear listens to melodious sounds.

But it is not how to make "beauty go beautifully" that the photographer wants to know, so much as how to manage and make the best of the ordinary sitter who comes to the studio in the course of every-day practice.

Much will depend on the age of the subject, but we will take it for the present that she is neither very old nor very young, neither a young girl nor an elderly matron. Something also must be allowed for the temperament of the sitter; difficult poses should never be tried with nervous or awkward people.

A general rule might be given in very few words: Make your pose very simple, but avoid the "front elevation" or "profile section" effect, to do which you must get variety in the lines of the figure; but in doing so, avoid the twists and contortions so much affected by some photographers. Try to get the feeling of life and motion.

To accomplish this, it is sometimes necessary to make your subject walk round the studio and suddenly stop at the point where you wish to photograph her, thus getting the effect of suspended motion which is often seen in statues, and gives such an effect of animation when properly managed. The Apollo Belvidere is a well-known example of the kind of pose I mean. The figure is suddenly arrested in its action to watch the flight of the arrow, and stands for a moment in a pose that gives great variety of graceful lines without exaggeration, and could have been easily photographed. But to come down from the classic to the real, let us try to sketch a figure photographed on this principle. And I may mention here that it would be easy to give a set of poses for imitation, but this would be bad for the student if he did not get at the same time the principles on which the pose is based, and learn the causes which lead up to the pose, as in the present example.



A lady walking past a table slightly stoops to pick up a book or a flower, and raising herself, turns her head to speak to a friend. This action, if made by an easy and graceful figure, is full of animation, and gives great variety. Sitters almost always place both feet flat on the ground as they stand for a portrait; this often gives great stiffness. In the pose just described, if the left foot rests on the toe, as in the act of walking, the gracefulness of the action is much increased, and there is more "go" in the figure.

The changes may be rung on this idea for representing figures in suspended motion. A lady sitting at her table or desk rises as a friend enters the room; she picks up a book, or buttons her glove. These are natural actions, and anything is better than the stiff, self-conscious position so often adopted. In attempting to give life and motion to a figure, avoid going to extremes. There are those who, overstepping the modesty of nature, put too much "gush" into their poses. There are also those of what might be called the invertebrate school who contort their figures into ridiculously strained attitudes, in their endeavor to make them graceful.

As a rule for the ordinary lady sitter, there is nothing better than the simple attitude a figure takes when standing in a room with the hands together, or, for the sake of variety, one hand may be on the table or behind the back, care being taken to avoid any ostentatious display of pose. Let the art conceal the art, and not let the figure suggest the idea that every limb and finger and fold had been adjusted by the operator. On the other hand, it must always be remembered that those portraits which appear the easiest and most natural owe their effect, not to letting nature alone, but to the skill of the photographer in seeing at once what wants correcting, and making the alteration on the instant, before the sitter has had time to tire. The best poser is he who sees at once what he wants, and knows the readiest means of getting it. Some posers are so skillful and full of resource that they take the portrait almost without troubling the sitter, making the sitting, as it were, merely a little episode in the midst of a pleasant conversation. These are the masters of the art, and I am afraid their number is small. The majority of photographers have to painfully feel their way and (the most conscientious of them who feel they must not only earn their money, but let their customers see that they are earning it) fidget their sitter about with so many alterations and adjustments, that the resulting picture often represents a much wearied sample of humanity, with all expression of life or feeling worried out of it.

Many photographers cannot get on without the eternal chair, by which they place every standing figure. It is the abuse, rather than the use of the chair, that is so objectionable. The heavy carved oak chair and *prie-dieu* have been already laughed out of photography, but there is nothing to be said against a neatly designed drawing-room chair; this piece of furniture is always useful when used judiciously. It is better when its lines are cut up or carried off by other furniture, such as a table behind it; or its too formal lines may be broken by throwing a shawl partly over the back. A black lace shawl is of infinite use in a studio.

Seated figures are usually more easily managed than standing ones. There seems to be so much more for a seated lady to do than when in the standing position. Reading, working, sewing, drawing, writing, a cup of tea, all lend their aid. A great deal also can be done with a fan, which lends itself admirably to a variety of change of pose.

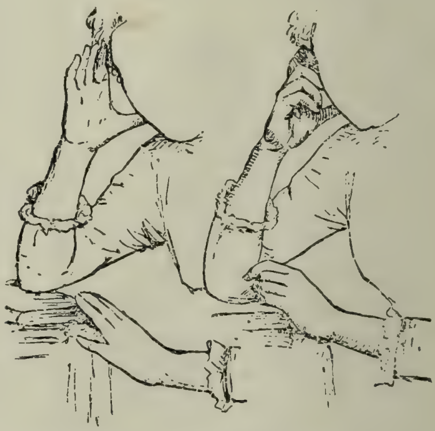
It frequently happens that when all other devices fail, a passable portrait can be got by making the sitter look down, as in reading a book, arranging flowers, knitting or sewing, thus evading the difficulties of staring eyes and open mouths.

The mention of the looking down pose somehow reminds me that a few words may be profitably said on the hands. One of the most difficult things on the stage, I have heard an old actor say, is what to do with the hands. This is a difficulty that occurs with fuller force to the photographer. Of great pictorial importance, when properly employed, they oftener are the cause of a portrait being rejected than any other part of the picture. The one great fault that ladies find is that their hands are too large, even when it can be demonstrated that they are in proportion with the head; and they will be found to be always so if they have not been taken with a lens of too short a focus, and if they are as sharply defined as the head. This erroneous notion touching the exaggerated size is traditionary.

Before the introduction of photography, which corrected many artistic mistakes, artists used to draw the hand so absurdly small, that when the truth was seen in photographs it was not believed. Still there is some truth in the hand being too large in many photographs, and the fact that to prevent this the hands must be in the same plane as the face, cramps the operator very much in his posing. There are positions of the hand in which it looks much larger than in others, especially where the broad back of it is seen, or where the two hands are joined together in a broad light, and look, at a little distance, like one hand. When the fingers are interlaced the effect is similar; so also when a long wrist is shown without being broken by a bracelet or other means.

It is better, if possible, to let the hand take its own position, and if it does not come gracefully, to try again. To alter the fingers much is seldom very successful, and if the sitter begins to think about her hand, it never looks either graceful or natural. Care should be taken that the light does not fall too flatly or strongly on the hands, so as to increase their apparent breadth or size.

A well-formed hand is a beautiful object, and is of great use pictorially. So much was thought of it by the painters of the last century, and affectation in posing and displaying the hands was carried to such a pitch, that in some pictures they are the principal objects, and the heads are accessory. Of course, the great object in composing a portrait should be to make the head the principal object, and the hands take the second place. Care should be taken that the fingers curve gracefully, and that the hand does not look like a claw. That a very little difference in position will make a vast difference in effect is shown in these sketches from photographs of the same hand.



* * *

I THINK the BULLETIN now in its new dress takes the lead of all photographic journals.

Very respectfully,
C. P. McDONNELL.

ELECTRIC PHOTOGRAPHY.

The photographing of various scenes upon the stage has often been accomplished, but to take a picture of the audience with a camera is a far more difficult matter. The following account from the *Boston Herald* tells of the way this latter feat was accomplished :

The Bijou Theatre was crowded last evening by a brilliant assemblage, a considerable portion of which was attracted by the announcement that a photograph of the audience would be made, and a copy given to each person attending. At the close of the first act, Mr. H. B. Lonsdale announced to the assembly that a photograph of the house would be made, and in order to have it a success it was necessary that all should sit perfectly quiet. This was the signal for a general bustling. Ladies who were perfectly satisfied with their personal appearance before, now began to find some fault in their wardrobe which required immediate attention. The gentlemen threw back their overcoats, that the silk linings might have a respectable representation in the camera, and struck various unnatural and uncomfortable attitudes, supposed to be picturesque ; and ladies who wore diamonds on their fingers found it convenient to remove their gloves and rest their hands on the plush backs of the seats in front of them. Several gentlemen who ordinarily think it a bore to sit in an orchestra seat stepped out to the box office and eagerly asked if it were possible to purchase any seats near the centre of the middle aisle. When the house was perfectly quiet, Mr. Conly, the photographer, stepped in front of his instrument and requested the audience to remain perfectly quiet. The response was a renewal of the bustling and a very general coughing. He waited patiently for the audience to become quiet, and then removed the cap from the lens. For five seconds the house was as still as the house of death, but the situation was novel, and too suggestive for the average auditor to stand, and soon a perceptible smile was noticeable on the faces of some of those present, which rapidly developed into a broad grin, from that to a hearty laugh, and then to an annoying guffaw, which made the prepared plate in the camera shiver, and gave Mr. Conly a touch of artistic malaria. He rapidly placed the black cap on the instrument, and prepared for a second artistic execution. This time the audience did much better, but the result was not entirely satisfactory, and Mr. Conly, stepping to the front of the stage, announced to the audience that he wished to make as perfect a picture as possible, and he would like to have each person in the audience sit as he would if he were going to have his photograph taken in a studio. This time it seemed as though the sitting would be a perfect success, but as the time during which it was necessary to have the instrument exposed drew toward the end, the ever-present individual who is anxious to pose for a wit shouted : "Let her go, Smith," and again the picture was ruined. Mr. Conly then stepped forward again, and said that he was attempting to do something in the artistic photographing line that had never before been attempted in Boston. The light furnished was excellent, and the conditions were favorable, if only the audience would aid him by sitting quiet. It was a difficult thing to make such a photograph as he wanted to produce, and it would be simply impossible for him to perform his work successfully unless he had the co-operation of the audience. If they would assist him, he would give them a picture which would be well worth preserving, and in its way would be a great novelty. When he concluded speaking, he was given a hearty round of applause, and the good effect of his words was seen when next he made an exposure of the plate. The audience remained very quiet, and in 30 seconds Mr. Conly was content to run the risk that his plate would serve his purpose. The theatre presented a very brilliant appearance while the picture was being taken, and the light closely resembled daylight. All the Edison lamps ordinarily used in the theatre were lighted, and, in addition to these, fifteen American lights were placed in various parts of the theatre, according to the copyrighted plan of Mr. Erlanger, and the whole had an illuminating power of 40,000 candles. Not the least noticeable thing about the experiment tried was the steadiness of the electric light and the facility with which it was worked. This afternoon the audience will be photographed at the end of the first act. Each person attending the performance will be handed a check as he enters the house, and this can be exchanged at the box office for an order for a heliotype of the picture. These will be ready in a day or two, and, as they will be 14x11 inches, showing the interior of the auditorium and a photograph of each individual present, they will have a personal interest not usually attached to the theatre souvenir.

[*From the N. Y. Times.*]

PHOTOGRAPHIC MARVELS.

Astonishing feats of instantaneous photography are frequently chronicled by the press, and certainly no one could be more astonished on reading of these feats than are photographers themselves.

For example, it was mentioned the other day in a Chicago paper that a photographer, while he had his head under the focusing cloth, with his lens directed at a lady whose portrait he was about to take, saw a strange man rush at her and seize her purse. The photographer instantly touched a spring and caught the robber's likeness, and although the latter had disappeared when the photographer issued from beneath the focusing cloth, the malefactor was identified by his photograph and was afterward arrested.

What astonishes a photographer who reads this interesting anecdote is the apparant fact that a Chicago photographer can take portraits without a plate, whether wet or dry. Other photographers have to use a sensitized plate; but, as this can be placed in the camera only after the photographer has finished the task of focusing and has withdrawn his head from the focusing cloth, it is evident that the Chicago photographer used no plate. The reader of the story in question who knows nothing of photography may see nothing incredible in it, since the general public has the impression that photographs can be taken with a lens and camera alone. We need not, however, wonder that photographers are astonished at the Chicago story and decline to believe it.

Careful inquiry reveals the fact that the story was true, and that an unexpected robber was really photographed instantaneously without the aid of a sensitized plate. It happened in this way. The photographer in question was in the habit of making his own dry plates, and while engaged in this process he accidentally transferred some sensitized gelatine film to the inside of his focusing cloth. When he placed his head under the cloth this film was again accidentally transferred to his nose, and when the image of the robber was projected by the lens upon the photographer's nose an impression was made. A few moments later, while developing a plate, an irritation of the tip of the nose compelled the photographer to rub that organ with fingers wet with the developing agent. The result was that a picture appeared, and when the photographer looked at himself in the glass he saw a fairly good portrait extending from the tip of his nose upward for the distance of three-quarters of an inch. He instantly "fixed" it with hyposulphite of soda, and it was upon the evidence of this nose that the robber was identified and arrested. Thus we see that the story in its true form is simple and credible, whereas in the form in which it was originally published it was absolutely impossible.

Patents.

ENGLISH.

Applications.

1,503. Lorentz Albert Groth, 30 Finsbury Pavement, London, E. C., for "a new or improved method of etching and reproduction by photography or heliography"—Communicated by Dr. Eugen Albert, Germany. Dated 3rd February, 1885.

1,637. Alfred William Smith, 93 and 94 High street, Rye, Sussex, for "an improved and easy method of placing magic-lantern slides in lanterns, and changing and removing the same."—Dated 6th February, 1885.

1,716. Arthur Coventry, Carlton Chambers, 18 St. Ann's street, Manchester, for "Improvements in apparatus for coating and drying plates for use in photography."—Dated 7th February, 1885.

1,782. Basil Alfred Slade, 34 Southampton Buildings, for "Improvements in sensitive metallic plates for photographic purposes."—Dated 9th February, 1885.

2,085. Francis James Ashburner, 33 Chancery Lane, London, for "Improvements in photography."—14th February, 1885.

2,102. Charles Preston, 6 Livery street, Birmingham, for "Improvements in photographic camera lens shuters."—16th February, 1885.

2,142. Alexander Cowan, 36 Porchester Terrace, Bayswater, London, for "The exhibition, change and dissolving of pictures in the magic lantern."—17th February, 1885.

2,205. Charles Groombridge, 68 Fleet street, London, for "A method of, and means or apparatus for, regulating admission and exclusion of light in photographic cameras, microscopes, telescopes, magic lanterns and other optical instruments."—17th February, 1885.

2,241. Frederick Woodward Branson, 33 Chancery Lane, London, for "Improvements in photographic shutters."—18th February, 1885.

2,265. David Hoyles Cussons and William Tulliffe Turner, 79 Bold street, Liverpool, for "Attaching a photographic camera to a tricycle for use in out-door photography." —19th February, 1885.

2,285. Joseph Goodby, 7 Staple Inn, Middlesex, for "Improvements in frames for mounting or framing photographs and pictures."—19th February, 1885.

2,466. Anthony Philburn, 132 Katherine street, Ashton-under-Lyne, for "Burnishing, rolling or otherwise finishing photographs mounted on cards."—24th February, 1885.

2,699. Leon Warnerke, Silverhowe, Champion Hill, London, S. E., for "Improvement in the preparation of the sensitive paper or other fabrics applicable as substitute of glass in photography."—28th February, 1885.

2,759. Charlton James Wollaston, 47 Lincoln's Inn Fields, W. C., for "Improved means for controlling and regulating the manner and duration of exposure in photographic apparatus."—2d March, 1885.

Renewals.

533. Alfred Pumphrey, of Birmingham, for an invention of "An improvement or improvements in the production of printing surfaces."—Dated 8th February, 1878.

1,097. James William Thomas Cadett, of 68 Camberwell Grove, Surrey, for an invention of "New or improved pneumatic arrangements for facilitating the uncapping or exposing and capping or shutting the lenses used in apparatus for depicting persons or objects by photographic means." Dated 19th March, 1878.

775. C. D. Abel, Loiseau, etc., "Opera and field glasses, applicable as photographic apparatus."

Patents Sealed.

2,312. Alfred George Brookes, of 55 Chancery Lane, Middlesex, for "Improvements in the method and apparatus to be employed in the preparation of surfaces for printing or etching by the aid of photography."—A communication to him from abroad by Edward Kunkler, of St. Gall, Switzerland, and Jacques Brunner, of Kussnacht, Zurich.—Dated 29th January, 1884.

13,372. William Charles Hughes, 82 Mortimer Road, Kingsland Road, N. London, for "An improved frame for rapidly changing the pictures in a magic lantern."—Dated 9th October, 1884.

3,531. Thomas Honywood, of Courtenay House, the Causeway, Horsham, Sussex, for "Improvements in nature-printing."—Dated 18th February, 1884.

3,866. Josiah William Saunders, David Thomas Davies and James Alexander MacDonald, Ryland Works, Upper Tower street, Birmingham, for "Improvement in head-rests for perambulators, invalids' chairs, barbers' and photographers' chairs, and for other like purposes."—Dated 25th February, 1884.

319. Samuel Dunseith McKellen, of 18 Brown street, Manchester, for "Improvements in photographic cameras."—Dated 2d January, 1884.

1,814. Frederick William Hart, of 8 and 9 Kingsland Green, London, Middlesex, for "Improvements in portable folding tripod stands."—Dated 21st January, 1884.

Specifications Published.

3,865. Thomas James, 37 Renshaw street, Liverpool, Lancashire, for "Improvement in obtaining typographical impressions from photo-relief surfaces."—Dated 25th February, 1884.—*Provisional specification.*

2,981. Walter Bentley Woodbury, of South Norwood, Surrey, for "Improvements in methods for producing blocks by means of photography."—Dated 8th November, 1884.

5,144. George James Rhodes, of 35 Dudley Road, Wolverhampton, Staffordshire, England, for "A new and improved process for producing pictures on enameled iron."—Dated 18th of December, 1884.—*Complete Specification.*

AMERICAN.

312,337. Charles Dorey, Lock Haven, Pa. "Photograph burnisher."—Filed July 29, 1884.

314,317. Photographic Camera — Walter Clark, N. Y. Filed Aug. 15, 1884. Issued March 24, 1885.

314,346. Photographic Paper and Sensitive Emulsion therefor—T. C. Roche, Brooklyn. Filed March 18, 1884. Issued March 24, 1885.

314,811. Apparatus for Coating Photographic Plates—By J. Edwards, London, England. Filed Oct. 22, 1884. Issued March 31, 1885.

315,219. Photographic Plate or Sheet-Holder —E. B. Barker, N. Y. Filed Nov. 18, 1884. Issued April 7, 1885.

What Our Friends Would Like to Know.

Q.—L. B. S. writes: "In the exhibition of Association of American Amateurs, can any one send prints, or how will admission be gained? Also please inform me if the prints in the BULLETIN are from amateurs, and sent to you."

A.—The exhibition you refer to is probably by the American Art Association; there is no exhibition announced by the Society of Amateur Photographers. The prints in the BULLETIN are often from negatives made by amateurs.

Q.—J. S. G. asks: "Will you kindly advise what is meant by 'fuming' sensitized paper, and the articles required for the same?"

A.—Fuming simply means exposing the paper to the fumes of strong ammonia. This is best done in a close wooden box, by placing the paper around the sides and a saucer of strong ammonia solution in the center. As to time, the directions given with the paper are sufficient; but do not be in too great a hurry, as the ammonia solution is often weaker than it should be.

Q.—O. H. writes: "Would like to know how to work a toning bath, to be sure to get a nice brown tone. Also, I developed an old Beebe plate with carb. soda developer, the same that I had used successfully on other plates, and I got a nice negative; but after fixing with hypo. and alum, and beginning to wash it, it blistered nearly all over. Would like to know the cause of the blisters."

A.—In toning for brown shades, place the prints in water with a few drops of acetic acid. This will turn them red-brown, and then, after washing once, you can obtain the brown tone in the ordinary toning bath by carefully watching the change of color, and stopping when the desired tint is obtained. In regard to the blisters you mention, we have never used these plates; but it appears to us that your water was too warm; any plates will blister in warm water unless specially prepared for such treatment, as "tropical" plates for instance.

Q.—W. A. H. asks: "Will you kindly publish in the BULLETIN the best formula for preparing silvered paper that will keep? Also a toning bath that is suitable for it?"

A.—Numerous formulas are found in the books, but they are not always successful. It is better to use freshly-silvered paper or the ready-sensitized paper sold by the dealers. The formulas for preparing the latter are manufacturers' secrets, and only that obtained from Europe is good. The toning bath for such paper is that generally used—acetate and bicarbonate of soda, with gold chloride.

Q.—E. P. writes: "Is not alcohol a solvent for albumen, and is salt really of any value to prevent the further toning of prints after their removal from the bath?"

A.—Alcohol does not dissolve albumen. No; salt is used to prevent blisters on the albumen paper, and then a nearly saturated solution is used.

Q.—E. E. R. writes: "Tell me if I can use McAllister's make of magic lantern to make enlargements."

A.—You cannot use any of the ordinary forms of magic lantern, because they are not sufficiently light-tight.

Q.—J. H. McG. writes: "Do old dry plates contain silver in quantities worth saving?"

A.—Yes; an old 8 x 10 plate contains the equivalent of from ten to fifteen grains of silver nitrate.

DEAR EDITOR:—I send you copy of a letter that may be of interest to the readers of the BULLETIN, as the developer in question is used by a very large number of them.

Respectfully, D. COOPER.

MR. DAVID COOPER,

DEAR SIR:—I herewith send you two of a few negatives which I have taken in Florida this spring, and I will be greatly obliged if you will give me your opinion as to the quality of the same. I think they are good, but how good I will leave you to determine. It may be of interest to you to know that these negatives were developed with a solution according to your formula, viz.: Pyro sulphite soda and carbonate of soda. On the 18th of last January I made up a quantity of your developer, and when packing to go to Florida last February I found that I had about 10 oz. of each solution remaining in my developer bottles. I was about to throw it away when, upon second thought (remembering what you had told me regarding the keeping qualities of this developer in a combined state), I concluded to mix them, so I put the soda solution into the pyro. Now these negatives were developed with this combined developer on the 3d of this month, over six weeks after I mixed them. You may remember that when I came from England last winter I was a firm advocate of the pyro ammonia formula, and did not think of changing my ideas until I saw you with "my own eyes" turning out such wonderful negatives with that vulgar, cheap compound (as my English friends call it), washing soda, and even then I thought "he may succeed," but the ordinary amateur never. Well, here I am an amateur and a very ordinary one. Have I succeeded? Please, be so kind as to tell me.

Yours,
HORACE WARREN GRIDLEY,
72 Fifth avenue, N. Y.
April 13, 1885.

The negatives sent to Mr. Cooper have been shown to us, and we take pleasure in saying that for chemical effect and artistic selection they are unsurpassed. They are, in short, equal to anything that could be desired by the most ambitious amâteur or the most experienced professional.

Views Caught with the Drop Shutter.

AT the Ladies' Fair for the Benefit of Sick and Destitute Saleswomen, we are glad to note that the photographic art lent its aid in contributions to this worthy object. Mrs. Henry J. Newton took a prominent part in the enterprise and her table in the foyer of the Metropolitan Opera House contained a number of the beautiful instantaneous marine views of Mr. Newton. We are glad to see also that Sarony, Mora, Fredericks, Falk, Bogardus, Pach and Hugh O'Neil also contributed to this deserving charity. Photography never begets a mean spirit in the votaries to its art.

THE managers of the Franklin Institute in Philadelphia have decided to hold, during the fall of the present year, an exhibition to be devoted, as their announcement declares, "to such recent inventions, improvements and discoveries in the sciences, arts and manufactures as may be deemed worthy of the name, the place and the occasion."

The subject is an elastic one, and, if the proper discrimination is exercised by the committee in charge of the arrangements to exclude objects of a trivial or unimportant character, will afford the opportunity for a highly interesting and instructive exhibition.

WE have before us a very handsome Catalogue of the Photographic Stock House of Hiram J. Thompson, of Chicago. It is uncommonly well executed typographically, and presents an array of goods that tells of the enterprise of the firm that sends it out.

NEW CARDBOARD MANUFACTORY.

MESSRS. A M. COLLINS, SON & CO., of No. 527 Arch street, Philadelphia, long and favorably known as makers of cardboard, have entered into a contract for a new factory building on a plot of ground of their own, at the northwest corner of American and Oxford streets. This structure, it is said, will be the most complete establishment of the kind in the country. It will have a width of fifty-five feet and a frontage on Oxford street of one hundred and twenty feet, and a depth on American street of two hundred and forty-one feet seven inches. Adjoining the main structure, on the latter-named thoroughfare, will be a wing fifty-five feet by sixty-five feet seven inches in dimensions, extending to and fronting on Bodine street. All the buildings are to be supplied with wide fire-proof staircases at each end and exterior balcony communications, forming sure and simple means of exit in case of fire or panic from other causes. The elevator shafts, two in number, will be in the form of brick flues, with the door communications on each floor so constructed as to exclude fire and smoke as far as possible. Above the peak of the roof will be placed three large water tanks, with a capacity of 20,000 gallons; the water supply is to be continuous, for use in tbe factory and in the event of fire.

The great weight of cardboard, and the ponderous machinery used in its production, render necessary the construction of walls and floors of the most substantial character. A one hundred and twenty-five horse-power engine is to supply the motive power. This will be located in an engine-house placed in the central area, at a point near the main building. Adjoining the engine-house is to be a one-story boiler-house, in which will be placed four tubular boilers with a capacity of two hundred and forty horse-power. As far as posible, the engine and boiler houses will be isolated from the main structure. It is exexpected that the factory will be completed by the first of October next.

SOME remarkable photographs of a pistol bullet in its flight, under the illumination of an electric spark, have been secured by Prof. E. Mach, of Prague. He has also photographed the air-streams which one may see over a

Bunsen burner placed in sunshine, and has even obtained pictures of waves of sound, these last being made visible by a method in which advantage is taken of the irregular refraction of light by the waves set in vibration by sound. Although these experiments may not have any practical value, they are interesting as showing the great degree of perfection to which the photographic art has been carried.—*Manufacturers' Gazette.*

WE have to thank the Chicago Amateur Photographic Club for a kind invitation to their reception, at the Art Institute, May 4. We are sorry that we could not be present.

WE are indebted to Mr. J. H. Dampf, of Corning, N. Y., for a correction of an item in regard to Treadwell & Davis, of that place. These gentlemen were *not* burnt out, as the item, taken from a daily paper, stated ; neither have they sustained any damage. We are very glad, indeed, to make this correction.

ANTONIO USDA, aged forty, a Spaniard, who had a small photographic gallery at No. 4 East Fourteenth street, and lives back of the shop, was found unconscious yesterday morning about 9 o'clock. An ambulance was called and he was taken to the New York Hospital, but he died before he reached there. He had taken a big dose of cyanide of potassium. The cause of the suicide is not known, but it is supposed that it is due to depression from lack of business.—*N. Y. Tribune*, April 27.

THERE are, at New Orleans, some views of the public buildings at Washington, taken by order of the Government, that have a length of seven feet by five wide, and are the largest photographs in the world.

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ADVERTISING RATES.

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¼ "	5.00	7.50	18.50	32.00	56.00
⅛ "	3.00	5.00	10.00	17.00	30.00

Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

ANTHONY'S

Photographic Bulletin.

PUBLISHED SEMI-MONTHLY,

Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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Vol. XVI. SATURDAY, MAY 23, 1885. No. 10.

BUFFALO.—1885.

Again we call the attention of our photographic brethren to the meeting at Buffalo, the time for which is now fast approaching. From all that we can learn, this convention will far excel all previous ones; not that these latter did not fulfill all the anticipations of those who had them in charge, but because it is becoming more and more apparent to all interested in photography that these meetings are necessary to the permanent advancement of the art, and the fraternity is aroused and interested in them. Like the various expositions that take place from time to time in all civilized countries, they encourage good feeling among the members of the fraternity, they stimulate a spirit of generous emulation, and by the united efforts of all taking part in them promote the development of the art we love.

Judge Daly, in an address before the American Institute in 1863, speaking of such conventions and exhibitions, says: "Their regular recurrence has kept up a spirit of emulation—they have stimulated invention, by keeping up the constant desire for new discoveries and improved methods; and, lastly, they have dignified labor by giving it something more to struggle for than mere pecuniary compensation."

Such is the spirit in which these conventions of the Photographers' Association of America were conceived, and such is the spirit in which they will be carried on in the future. There are, doubtless, some who will criticize the officers, make belittling remarks about the proceedings, and endeavor to act disagreeably generally. But the large majority of the members are generous men, who will act together for the general good, and these will carry home with them many ideas, many friendships and more generous feelings from the meeting at Buffalo.

To those who are inclined to be critical and find fault, we would ask a few questions. Is the association assembled for your individual gratification? Are you and your ideas the only ones that are to be considered? Now, if we bring our discontented friends face to face with these queries, and appeal to their better feelings by reminding them that a great variety of tastes and dispositions have to be considered by the officers of the association, we are sure that there is not one of them but will answer, "Well, it don't quite suit me, but I'll lend a hand, anyway, if the rest want it that way." This is the feeling that should prevail, and everybody will have a good time.

We have been to many conventions

of this character, and in all those where a generous and unselfish feeling has prevailed, they have left memories that are carried along the years with undiminished pleasure.

To those that are thinking of going to Buffalo, we would urge to think no longer, but make up their minds to go. Take with you something you have done; something you have thought out; and compare notes with those that have been working in the same direction. If you have anything to say that is more than conversational, make up a paper to be read to the convention, always remembering that brevity in this, as in other cases, is the secret of success. In regard to the question of papers to be read at the meeting, too much stress cannot be laid upon the necessity for short and pointed productions.

Nothing is so tiresome on a warm day as to listen to a long paper read in a crowded meeting; and we care not how interesting the subject or the speaker is, when we make this statement. Our idea of the length of a paper is one twenty minutes long at the outside; and a man that cannot condense his ideas in that space, had better write an article to the journals, to be read some cool day and when it rains, and not try to inflict it upon his fellow men when they want to breathe fresh air and plenty of it. We believe that a number of short papers read in short sessions is the true way of making such meetings as those of the Photographers' Association a success. This gives time for discussions (which should also have a time limit), and leaves the members an opportunity for social intercourse and a comparison of notes in conversation.

If the members of the Photographers' Association of America go to Buffalo with the determination to get all the enjoyment and instruction out of it they can obtain, and will but remember that to attain that end each must contribute his quota to the general good, we are convinced that all who attend that meeting will return to their homes with the feeling that these conventions are productive of great good and should always be attended by those who care anything for the advancement of the photographic art.

◆

[*From the Journal of the Franklin Institute.*]

ISOCHROMATIC PHOTOGRAPHY.

BY FRED. E. IVES.*

It is well known that the ordinary photographic processes do not reproduce colors in the true proportion of their brightness. Violet and blue photograph too light; green, yellow, orange and red, too dark. For a long time it was believed to be impossible to remedy this defect; and even when it became known that bromide of silver could be made more sensitive to yellow and red by staining it with certain dyes, the subject received very little attention, because it was also known that the increase of sensitiveness was too slight to be of practical value in commercial photography.

Dr. H. W. Vogel, who was one of the first, though not the first, to devote attention to this subject, announced, in 1873, that he had succeeded in making a yellow object photograph lighter than a blue or violet one, by using a silver-bromide plate stained with coraline, and exposed through a yellow glass. The plate showed no increased sensitiveness to red, and the experiment, although of considerable scientific interest, did not indicate a practically useful process.

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* Mr. Ives has kindly consented to give us another illustrated paper on this interesting topic at an early date, and embodying some recent experiments.—*Ed. of* Bulletin.

In the spring of 1878, I became interested in this subject, and tried to discover a method of producing plates which should be sensitive to all colors, and capable of reproducing them in the true proportion of their brightness. I commenced by trying nearly all the color sensitizers which had already been suggested, in order to learn which was the best, and then, if possible, *why* it was the best, as a guide to further research. Chlorophyl was the only thing I tried which was sufficiently sensitive to red to offer any encouragement in that direction; but the solution which I obtained was weak and unstable, and far from being a satisfactory color sensitizer. Hoping to obtain a better solution with which to continue my experiments, I made extracts from many kinds of leaves, and found that a solution from blue myrtle leaves looked better and kept better than any other, and when it was applied to the silver-bromide plates they became remarkably sensitive, not only to all shades of red, but also to orange, yellow and green. By placing in front of the lens a color-screen consisting of a small glass tank containing a weak solution of bichromate of potash, to cut off part of the blue and violet light, I obtained, with these chlorophyl plates, the first photographs in which all colors were reproduced in the true proportions of their brightness. But my chief desire at that time was to realize a method of producing from any object in colors a set of three negatives, in one of which the shadows should represent the blue of the original, in another the yellow, and in another the red, in such a manner that transparent pigment prints from these negatives—blue, yellow and red—would, when superimposed on a white surface, represent not only the lights and shadows, but also the colors of the object. This had already been attempted by others, who failed because their plates were not sufficiently sensitive to red and yellow.

Having succeeded perfectly in my undertakings, I published my discovery in 1879,[*] explaining how to prepare and use the chlorophyl plates, in connection with the yellow screen, for the purpose of securing correct photographs of colored objects.[†]

So far as I know, nobody tried the process. Nearly five years later Dr. Vogel announced that, after eleven years of investigation, he had at last realized a successful process of this character, and that this new process of his was the "solution of a problem that had long been encompassed with difficulty." This publication attracted a great deal of attention, and gave me occasion to again call attention to my process,[‡] and point out that it was not only the first practical solution of this problem, but the only truly isochromatic process ever discovered. Dr. Vogel's new process was not only no better in any respect, but the plates were insensitive to scarlet and ruby-red, and therefore would not photograph all colors in the true proportion of their brightness.

My method consists in treating ordinary collodio-bromide emulsion plates with blue-myrtle chlorophyl solution, exposing them through the yellow screen, and then developing them in the usual manner. The emul-

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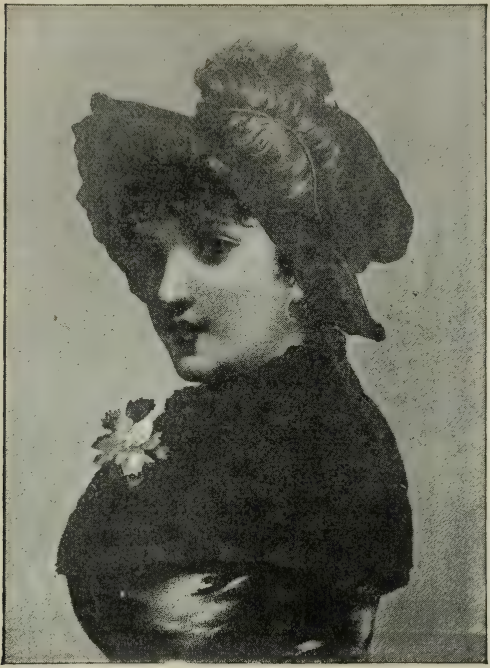
[*] *Philadelphia Photographer*, December, 1879, p. 365.

[†] I intended this publication to be a very full and explicit one, and it was sufficiently so to be perfectly understood by most who saw it; but some may think I did not sufficiently emphasize the importance of using the particular kind of chlorophyl which I mentioned. In a brief communication to the editor of the *Photo. News*, in 1883, I described some experiments with eosine as a color sensitizer, and then called attention to the superiority of blue-myrtle chlorophyl for this purpose, stating that I had not been able to secure such results with any other kind of chlorophyl, and that a fresh solution from fresh leaves must be used to secure the greatest possible degree of sensitiveness. See *Photo. News*, Nov., 1883, p. 747.

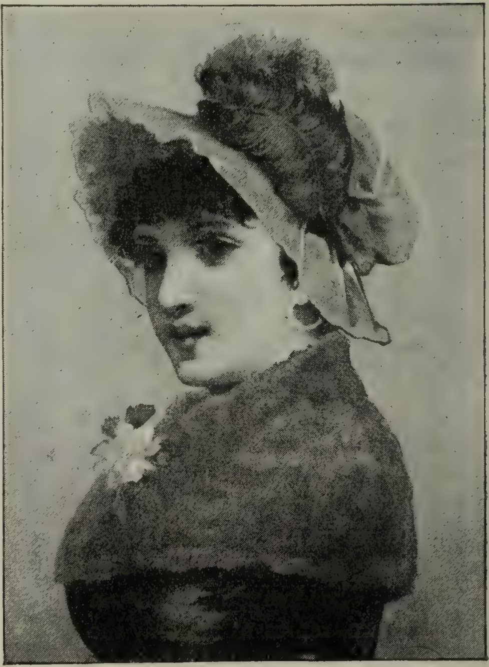
[‡] *Photo. News*, London, September 5, 1884, p. 566, and *Year Book of Photography* for 1885, p. 111.



From Ordinary Photograph of Chromo-Lithograph.

sion which I have employed is made with an excess of nitrate of silver, which is afterward neutralized by the addition of chloride of cobalt; it is known as Newton's emulsion. I now prepare the chlorophyl from fresh blue-myrtle leaves, by cutting them up fine, covering with pure alcohol, and heating moderately hot; the leaves are left in the solution, and some zinc powder is added, which helps to keep the chlorophyl from spoiling. I have a bottle of this solution which was prepared about six months ago, and now appears to be as good as when first made.* A glass plate is flowed with the emulsion, and as soon as it has set, the chlorophyl solution is applied for a few seconds, after which the plate is washed in pure water until smooth, when it is ready for exposure.

My color-screen consists of a small plate-glass tank, having a space of $\frac{3}{16}$ of an inch between the glass, filled with a solution of bichromate of potash about one grain strong. I place the tank in front of the lens, in contact with the lens-mount. The advantage of this tank and solution is that it can be more easily obtained than yellow plate glass,



From Isochromatic Photograph.

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* I originally recommended chlorophyl extracted from dried leaves, because I had not yet learned how to preserve the solution for more than a few weeks—and at some seasons it would be difficult, if not impossible, to obtain fresh leaves. The tea organifier which I recommended is also a color sensitizer, and when it is used in connection with the chlorophyl from dried leaves the plates are as sensitive to red as can be safely prepared and developed in the light of an ordinary photographic "dark-room." Plates prepared with chlorophyl from fresh leaves do not require treatment with the tea organifier to secure this degree of sensitiveness. Recently I have used the tea organifier and some other sensitizers, in connection with the solution from *fresh* myrtle-leaves, and in this way have produced plates having such an exalted color sensitiveness as to be unmanageable in ordinary "dark-room" light. Possibly such plates might be prepared and developed in total darkness, by the aid of suitable mechanical contrivances, but I am not sure that they would work clear even then, because they appear to be sensitive to heat as well as to light.

and the color can be adjusted to meet any requirement.

The plates require about three times as much exposure through the yellow screen as without it, and may be developed with the ordinary alkaline pyro-developer.

In order to illustrate the value of this process, I made two photographs of a highly-colored chromo-lithograph, representing a lady with a bright scarlet hat and purple feather, a yellow-brown cape and a dark-blue dress. One, by the ordinary process, represents the blue as lighter than the yellow-brown, the bright scarlet hat as black, and the purple feather as nearly white. The other, by the chlorophyl process, reproduces all colors in nearly the true proportion of their brightness, but with a slight exaggeration of contrast produced purposely by using a too-strong color solution in the small tank. These photographs are herewith reproduced.

I also made two landscape photographs, one by the ordinary process, and the other by the chlorophyl process, exposing them simultaneously. In the ordinary photograph, distant hills are lost through over-exposure, yet the foreground seems under-exposed, and yellow straw-stacks and bright autumn leaves appear black. In the chlorophyl photograph, the distant hills are not over-exposed, nor is the foreground under-exposed ; the yellow straw-stacks appear nearly white, and bright autumn leaves contrast strongly with the dark green about them.

To test the relative color-sensitiveness of plain emulsion plates, plates stained with eosine, and plates stained with the blue-myrtle chlorophyl, I exposed one of each kind through the same yellow screen, giving each five minutes exposure, on the same piece of copy, which was the chromo-lithograph already described. The plain emulsion plate showed only the high lights of the picture, after prolonged development. The eosine plate was under-exposed, but brought up everything fairly well except the scarlet hat, which came up like black. The chlorophyl plate was over-exposed, brought out all colors better than the eosine plate, and gave full value to the bright scarlet of the hat, the detail in which was beautifully rendered.

Dr. Vogel advanced the theory that silver-bromide is insensitive to yellow and red, because it reflects or transmits those colors ; and that it becomes sensitive when stained, because of the optical properties of the dyes. He afterward admitted that only such dyes as are capable of entering into chemical combination with the silver-bromide proved capable of increasing its sensitiveness to color, but he held to the theory that the optical properties of the compound were the cause of its color-sensitiveness.

I have shown that the color-sensitiveness can be produced by treatment with an organic compound which has none of the optical properties characteristic of dyes ; and that chlorophyl, which absorbs only red light, greatly increases the sensitiveness also to yellow and green. There is, therefore, good reason to doubt if the color-sensitiveness is ever due to the optical properties of the dye or combination.

Attempts have been made to produce isochromatic gelatine dry plates which, while many times more sensitive to white light than my chlorophyl plates, shall also show the same relative color-sensitiveness. Such plates would be very valuable but for one fact ; it would be necessary to prepare and develop them in almost total darkness. Gelatine bromide dry plates extremely sensitive to yellow, *but compara-*

tively insensitive to red, might be used to advantage in portrait and instantaneous photography, because they could be safely prepared and developed in red light; but when truly isochromatic photographs are required, the time of exposure must be regulated to suit the degree of sensitiveness to red, which cannot safely be made greater than I have realized with my chlorophyl process.

HIBERNIAN ARITHMETIC.

Editors of BULLETIN:

Perhaps the following may amuse some of the readers of your interesting journal:

Some time ago a young Irishman came into my gallery, asking if we would make him a quarter of a dozen photos. The price being satisfactory, the sitting was made, and he came and leaned over my shoulder, while I entered his order in the register.

On the day appointed, he appeared, and the envelope containing his photos was handed him. Taking out the three pictures he threw them down on the desk and exclaimed, "Phat's this?" Somewhat surprised, I replied, "Your pictures, of course!" "Yis, but hould on; I was to have four."

"Why, no," said I, "you only paid for three." "I beg *your* pardon, sor, said he, "but I saw you put it down in your book, *wan-fourth of a dozen!*"

I explained that at this season of the year we only gave three for the fourth of a dozen. He looked at me in blank amazement for a moment, when it slowly dawned on him that he was a little off on his arithmetic, and he gathered up his pictures, with the remark, "O, yer roight, sor! yer roight, so ye are. Good day, sor;" and departed.

J. B. READMAN.

OUR PICTURE GALLERY.

NUMEROUS additions to this collection have been received since we last took a survey.

Mr. E. L. Wilson contributed some very handsome views of the New Orleans Exhibition. It is indeed a treat to see such artistic work; the examples sent us are gems, and reflect the refined taste of the donor.

Mr. Gayton A. Douglas sent some exceedingly good examples of work, done with the Detective Camera, by Mrs. Shufeldt, of Chicago. Our New York operators of this sharp little instrument can show no better work. Of a large number of prints sent, we can see none to find fault with.

Mr. Albert L. Butler, of Hartford, sends a piece of amateur work of unusual merit. It is a picture of a carriage and a pair of horses, and is uncommonly sharp and clear.

C. A. Palmer, of Matteawan, forwarded several specimens of his work that are of fine quality. The animal pictures are very good, and the bicycle rider first-class.

From Mr. Otto Hines, of Florida, we have received a number of pictures. The street view is the best, and the house, 8x10, with the soldiers on the piazza, is a good piece of work. The negative work is all good; but, to our taste, the toning is too cold; we prefer a warmer shade; but this is only a matter of fancy.

A charming set of pictures, illustrating a story, came from Mr. Perkins, of San Francisco; his little daughter, Miss Ivy Perkins, posing in the different scenes, with a truly charming effect. These pictures have been extensively admired here, and the more we look at them, the more the beauty of the idea and the fine artistic effects of the work fascinate us. We wish we could convey in words all we enjoy in looking at these pictures.

Laighton Bros., of Norwich, Conn., send us an interesting photo of a gentleman 100 years old. The picture was taken in the house of the sitter, and at a great disadvantage in the matter of lighting; but the face is remarkably handsome, and the side light gives an effect of uncommon beauty in the facial lines.

We have also received a print from a negative of the late solar eclipse, taken at Dearborn Observatory, Chicago, by Profs. Hough, Garrison, and Burnham, with their big telescope. While not specially interesting to photographers in general, the result is a remarkably clear piece of work of this character.

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WE are making an album of the pictures produced by our amateur friends; and we should very much like to receive prints from all of them, giving some of their poorest as well as their best efforts. Don't forget us.

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[*British Journal of Photography.*]

BLISTERING OF THE SURFACE DURING OR AFTER FIXING.

We have more than once given a method of cure, and it may here be repeated; it is simply to add to the fixing bath a certain proportion of methylated spirit; the quantity, which varies from 5 to 15 per cent., can only be found by experiment. We have never yet met with a sample of paper whose blistering propensities were not entirely subdued by this simple remedy. Dilution of the fixing bath is also very efficacious, and, as it involves no additional outlay, may be first tried; but for well-known reasons it is inadvisable to reduce the strength below about 15 per cent., say three ounces of hypo to the pint of water.

OBITUARY.

WILLIAM KLAUSER.

IN recording the death of this well-known photographer, we regret the loss of a true worker in the photographic world. He was born in the year 1828 at St. Petersburg, in Russia, and in 1848 came to the United States. His early life here was in association with Mr. P. C. Durhochois, who was his partner for many years. After dissolution of this partnership, he continued to practice the art of photography for a number of years longer, until sickness compelled him to give up active labors in the gallery, and he undertook the instruction of amateurs, by many of whom he was well and most pleasantly known. All who knew him were attracted by his kindly manner and disposition, and speak with sorrow of the loss of their friend and fellow-worker in photography. A wife and two daughters are left to mourn his somewhat unexpected death.

MAY 14, 1885.

DEAR SIRS: Many thanks for the last number of the BULLETIN you sent me. I trust you will not forget to forward it to me after I leave here. What a charming journal it is! I would not miss it for anything.

I regard it as a most useful paper both to the amateur and professional photographer. I can only say, keep on as you are doing and you will deserve the thanks of the photographic world.

Faithfully yours,
R. GALLOWAY BELLINGER.

The BULLETIN is to my notion the best photo magazine published in this country. I should not attempt to keep up to the times photographically without it.

C. B. WAITE.

GENTLEMEN: I congratulate you on the appearance of the BULLETIN. It is a fine specimen of artistic printing and get-up.

Yours truly,
C. F. RICHARDSON.

A CURIOSITY.

We give on the opposite page a reproduction of an early publication of one of the first amateur photographic societies in this country. A glance at the names of the members of this club recalls many a well-known face, and some names that to-day are still worthy fellow-workers in life's tasks, although, perhaps, a little out of the line of the photography of the new and "dry" days.

We are indebted to Mr. Frederick F. Thompson, of New York, for the original paper from which the reproduction was made. In his letter he says: "Considerable is said lately about amateur clubs and societies. Just to show our young friends that the idea is not new, nor the very good clubs of the present day much ahead of the old fellows, I send you a copy of the only unique photographic paper printed, which I found among some old papers. That exchange club exchanged several thousand pictures in days when to take a photograph meant hard work."

We recommend some of the rules to the present New York Society of Amateurs, and think their adoption would prove useful as a stimulus to the work of the members.

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[*From Photographic News.*]

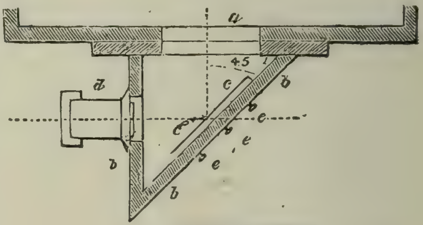
DIRECT PHOTO-TYPOGRAPHY AND PHOTO-LITHOGRAPHY BY THE CHROM-ALBUMEN PROCESS.

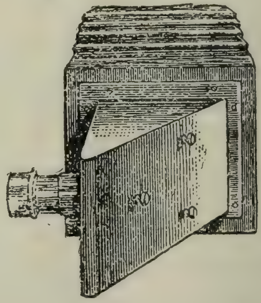
Professor J. Husnik has recently published full working details for the direct process on zinc, and the process not only gives us a ready means of reproducing the finest stipple or grain sketches with all their original characteristics, but it also saves the labor and delay of making the transfer, and the delicate task of inking up the first image on the metal plate.

It is quite true that the asphalt process gives results equal in sharpness and quality to those obtained by the chrom-albumen method; but as the sensitiveness of the bitumen film is very slight in comparison with that of the bichromated albumen, the latter method has a decided advantage.

Any direct process on zinc requires the use of a reversed negative, and it is only necessary now to refer to the method of obtaining these by means of the prism or mirror, a proceeding to be recommended when the negatives are to be made specially for the work.

Mr. Romain Talbot's convenient arrangement for using the mirror is shown in the subjoined figures, the first cut showing the arrangement in section, and the second exhibiting the external appearance of the camera when fitted.





A circular mirror, *C C*, is mounted in the triangular box, and this mirror can be adjusted to the exact angle of 45° with the face of the camera by means of adjusting screws, of which the heads are shown on the outside of the box. Commercial plate glass is not sufficiently true on the face to be used for the mirror, unless one is exceptionally fortunate in finding an accurately-surfaced piece; but it is necessary to obtain a true disc of glass from an optician. For silvering the glass, one cannot do better than to quote the directions for working Common's process, given by Major Waterhouse in a previous volume of the *Photographic News*.

"The solutions recommended by Mr. Common are three—

(1)	Nitrate of silver....	1 ounce
	Distilled water.....	10 ounces
(2)	Caustic potash.....	1 ounce
	Distilled water.....	10 ounces
(3)	Glucose............	½ ounce
	Distilled water.....	10 ounces

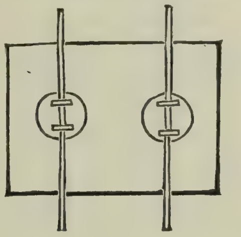
"The above quantities are sufficient for 250 square inches; consequently an ordinary copying mirror 8 by 6 would require rather more than 2 ounces of each solution, and other sizes in proportion.

"The caustic potash and distilled water must be quite pure. Ordinary caustic potash will not answer at all. The best to use is known as *pure by alcohol.*

"The glass surface to be silvered is carefully cleaned with strong nitric acid applied, as recommended by Mr. Browning, with a Buckle's brush, then well washed in clean water, and after rinsing with distilled water, laid, face downward, in a dish of distilled water till wanted.

"Before cleaning the glass, it will be necessary to arrange for supporting it face downward in the depositing dish, so that the surface to be silvered may be quite horizontal, and just below the level of the fluid, which should be about half an inch above the bottom of the dish.

"I have generally used a large cork, about four inches in diameter, cemented to the back of the plate, and fitted with three strings, by which it could be suspended in a level position and adjusted to any height by winding the string over a roller placed at a convenient height above the dish. As this arrangement was not available, I fixed on the back of the plate two ordinary wide-mouthed bottle corks of equal thickness in the positions shown in the figure, and to these corks attached thin slips of bamboo running transversely across the plate, and of sufficient length to rest on the sides of the dish, thus:



The slips of bamboo gave the arrangement a certain amount of spring, by which the height of the plate could easily be regulated by putting on weights till the surface of the plate was just below the level of the fluid in the dish.

"To prepare the silvering solution, a sufficient quantity of the silver solution No. 1 (2 ounces) is put into a perfectly clean glass. Ammonia is dropped in till the precipitate first formed is just re-dissolved. The same quantity of potash solution No. 2 as of silver is now mixed in, and the precipitate again dissolved by ammonia. A little more silver solution is then added to produce a distinct turbidity, and distilled water to make up the quantity necessary to fill the depositing dish to about three-eighths or half an inch, and the mixture is then filtered through cotton into another clean glass vessel.

"The same quantity—two ounces—of filtered solution of glucose No. 3 as was taken of silver and potash is now mixed in, and the whole poured into a depositing-dish (which should preferably be of glass well cleaned with nitric acid).

"The glass plate is then taken out

of the distilled water, and laid face downward on the silvering solution, being supported—as before described—just above the surface, so that the solution does not cover its back.

"Mr. Common places the requisite quantity of distilled water in the dish, in which the mirror has been remaining face downward, and then, having lifted the mirror up, pours in the undiluted silvering solution, together with the glucose solution, stirs well together, and then carefully lowers the mirror again into the dish.

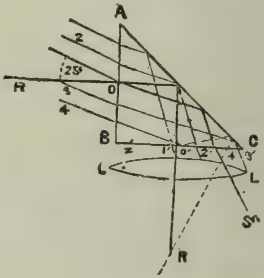
"Almost immediately after the immersion of the plate, the silvering action begins, and, if things are going on well, a brilliant reflecting surface will be seen at the back of the plate, and in forty minutes, or even less, a good deposit of silver will be obtained. It is usually recommended to stop the action as soon as the silvering fluid appears clear and free from turbidity; but it is not always easy, I find, to see this.

"After silvering, the plate is thoroughly well washed, finishing with distilled water, and dried off quickly. A slight cloudiness of the surface may appear, and must be removed by polishing before the mirror can be used. It is better to allow the mirror to remain a day or so before polishing, in order to harden the coating.

"To polish the plate, it should be slightly warmed, and perfectly dry, and rubbed very gently in small circles with a piece of very soft and dry chamois leather, afterward using a little jeweler's rouge.

"Mirrors should always be kept in a dry place, and will require re-polishing from time to time."

Although, when the reflecting prism is used, the exposures are a trifle longer than in the case of the mirror at its best, the liability of the silvered surface to become tarnished is so great—especially in a crowded city—that much is to be said in favor of the prism. It must, however, be remembered that the reflecting prism is not suitable for use with wide-angle lenses. The following sketch sufficiently illustrates the action of the reversing prism, and it is usually mounted in a triangular brass box that fits on the external end of the lens mount.



To prepare the chrom-gelatine solution, dissolve thirty grains of ammonium bichromate in four ounces of distilled water, and after having added, drop by drop, sufficient liquid ammonia to make the orange color of the solution change to a bright yellow, the white of a fresh and tolerably large egg is added. When well mixed, the preparation is filtered through fine muslin, and afterward through filtering paper.

A plate of planished zinc, as sold at the lithographic material stores, is now carefully cleaned with the fine emery paper (No. 000) sold by dealers in watch-makers' materials, care being taken not to touch the clean surface of the metal with the hand. Strong ammonia solution is now poured upon the metal surface, and well rubbed on with a tuft of blotting-paper. The plate is now thoroughly rinsed under the tap, drained, placed on a leveling-stand, and the prepared surface is flooded with the chrom-albumen solution. The liquid must be allowed to flow in waves several times backward and forward on the plate, and some must be allowed to flow off at each corner of the plate. The operation of flooding and flowing off at each corner must be repeated. Now bring the plate into an upright position, in order to allow the superfluous fluid to drain off, wipe away the fluid which collects at the bottom edge, and by rocking the plate while held in a nearly horizontal position, diffuse the remaining liquid evenly. The plate is now gently and cautiously warmed over the flame of a spirit lamp, the plate being held at a very slight inclination, so that the upper edge dries first, and the liquid does not flow back on the portions just dried; at the same time, great care must be taken that the plate is not so much heated as to coagulate the albumen; but if the plate is not made so hot as to feel unpleasant to the back of the hand, there is no fear of coagulating the albumen.

When dry, the surface should be yellow and brilliant; if it is dull or matt, too much bichromate has been used, or the drying has been too slow. It is scarcely necessary to say that the work of coating and drying should be done in a room lighted with yellow light. The exposure required is merely a short one, less than the time necessary to make a print on albumenized paper; and after exposure it is necessary to ink the plate over with a very thin but uniform layer of printing ink, taking care that the roller is in good order, and not too heavily charged; after which the zinc plate is placed in cold water, and after having been allowed to soak for a few minutes, it is carefully mopped with a tuft of lint or cotton-wool, this operation being continued until the whole of the subject is perfectly developed. In case of under-exposure, the lines wash off; and in case of over-exposure, it is difficult to clear the ground.

The plate is now etched into relief by the usual chemigraphic method (see *Photo. News* for 1882, page 690).

It is scarcely necessary to say that this method is applicable to photo-lithography, it being merely necessary to take a transfer from the zinc.

THE BEHAVIOR OF THE HALOID SILVER COMPOUNDS IN THE SOLAR SPECTRUM.

(*Continued.*)

BY DR. J. M. EDER.

INFLUENCE OF UNCOLORED SUBSTANCES UPON THE COLOR SENSITIVENESS OF THE BROMIDE OF SILVER GELATINE.

If ordinary bromide of silver gelatine plates are put into a bath of weak, slightly acidified alcoholic nitrate of silver solution[1] and dried, their sensitiveness to white light will increase two, and even threefold.[2] In the solar spectrum this action appears at first as an increase of the total sensitiveness, but, on closer observation, the relative sensitiveness toward the less refractive rays is also somewhat increased. Ammoniated silver solutions have the same effect, but make a stronger picture. Such plates keep only one day, and have not nearly the color sensitiveness of the colored plates.

If a bromide of silver gelatine plate colored with eosine is put into a weak (alcoholic is best) nitrate of silver solution, eosine[3] silver will form with the excess of nitrate of silver, and such plates are then generally more sensitive to white light, as well as relatively so to yellow-green.[4] Other coloring matters show a similar action.

If bromide of silver gelatine plates are bathed for a few minutes in diluted ammonia[5] and dried, they appear about twice as sensitive to white light, and give much more intense pictures.

Toward the solar spectrum such plates generally prove to be more sensitive in the same proportion, without the particular appearance of an increase of sensitiveness toward less refractive rays. But the coloration (blackening) becomes much more intense in the whole spectrum picture. If sensitizing color matter is added to the diluted ammonia, the sensitizing band will also appear stronger. The action of the ammonia, which volatilizes entirely during drying, can only be referred to a molecular change of the bromide of silver, which influences to a high degree its light sensitiveness, as shown by me in a previous article.

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[1] 100 c. c. alcohol and 0.1-0.5 c. c. of a 10 per cent. aqueous nitrate of silver solution.

[2] By application of the developers in general use.

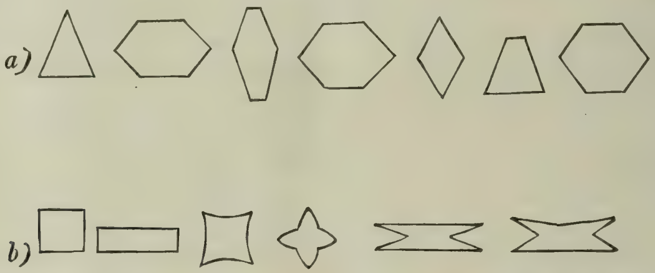
[3] Eosine silver by itself (according to H. W. VOGEL) is yellow sensitive (at D near green); this condition was first made known by ROBERT AMORY in January, 1878, in the American Academy (Journ. Photogr. Society, Great Britain, June, 1884).

[4] The pictures can be developed clearly in pyrogallic acid as well as in oxalate of iron, and print very well.

[5] 1-10 c. c. spirits of ammonia and 100 c. c. water.

The solution of the bromide of silver in ammonia leaves on evaporation microscopic crystals, as demonstrated by Elsden;[1] they also form by the precipitation of bromide of silver in presence of much ammonia. They have, according to the concentration of the solution, the form of Fig. 11 *a*[2] or Fig. 11 *b*,[3] and a size of 0.02 to 0.2 *mm.*, and a thickness of about 0.001 *mm.* Crystals of such size do not form by bathing bromide of silver gelatine in diluted ammonia; but by evaporating the ammonia from the moist plate, the bromide of silver becomes without doubt crystallized, and this may cause the increased quantitative light sensitiveness. Potash lye and carbonate of potassium also increase the sensitiveness, because they are able to act as bromine absorbants.

FIG 11.



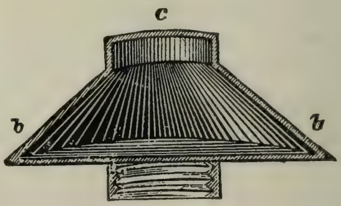
EXPERIMENTS ON THE CHEMICAL CONDITION OF THE BROMIDE OF SILVER WHICH IS MIXED WITH COLORING MATTER AND GELATINE.

For the critical examination of the phenomena which colored or uncolored bromide of silver shows in the solar spectrum, as well as the part the gelatine takes therein, the decision of the question is of importance—Does bromide of silver unite with the substances mentioned or not? Therefore, the same test conditions are to be observed as in the production of a light sensitive bromide of silver emulsion.

If bromide of silver emulsion is produced by the ordinary process, washed, and then thrown out in a centrifugal machine in liquid condition, the bromide of silver can be separated from the gelatine.

Mr. J. **PLENER** has constructed a machine for cleaning the bromide of silver to be used photographically, which he kindly placed at my disposal for these experiments. Fig. 12 shows the vessel used, made of gun metal, which is well gilded on the inside. The reservoir, filled with the liquid emulsion and then closed at C, is fastened at A upon a vertical axis, which is turned with a velocity of from 4,000 to 6,000 rotations per minute. By centrifugal force all bromide of silver is thrown toward the walls of the vessel at BB and forms there a cohesive mass, so that the clear gelatine solution can be poured out and the bromide of silver washed with water. In this manner the bromide of silver can be washed and cleaned completely.[4]

Fig. 12.



Bromide of silver which was separated from all soluble substances with the centrifugal machine by repeated flinging upward and washing in hot water still contained organic substances, according to my analysis, after drying at 140° C.—whereby much hygroscopic water escaped, and which were quantitatively determined by heating and transforming the silver produced into bromide of silver (with bromine).

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[1] Photographic News, 1881, p. 174.

[2] By evaporation of the concentrated ammoniated bromide of silver solution after diluting with five times the quantity of water.

[3] The same as before, after diluting with the same quantity of water.

[4] In a fresh gelatine solution it divides instantaneously to a fine emulsion of excellent photographic properties.

One hundred parts, by weight, of bromide of silver contained, in one case, 0.45 parts, and in another 0.52 parts of gelatine.

This shows that the bromide of silver during its precipitation in presence of gelatine absorbs the latter, and holds the same so obstinately that it cannot be removed by washing with hot water.

If Eosine or Cyanine is added to a gelatine emulsion, and is then washed, the coloring matter cannot be so completely removed that the yellow sensitiveness in the spectrograph would not appear. But as the bromide of silver was centrifugated and washed out of the bromide of silver gelatine containing eosine, and, further, as the centrifugating and washing was repeated three times, red-colored gelatine went off in the beginning, and later the different washings were colorless. Notwithstanding this, the bromide of silver remained weakly reddish by application of larger quantities of color matter, or appeared hardly colored by using less eosine; but in *all cases the sensitizing maximum characteristic of eosine appeared in the neighborhood of D.*

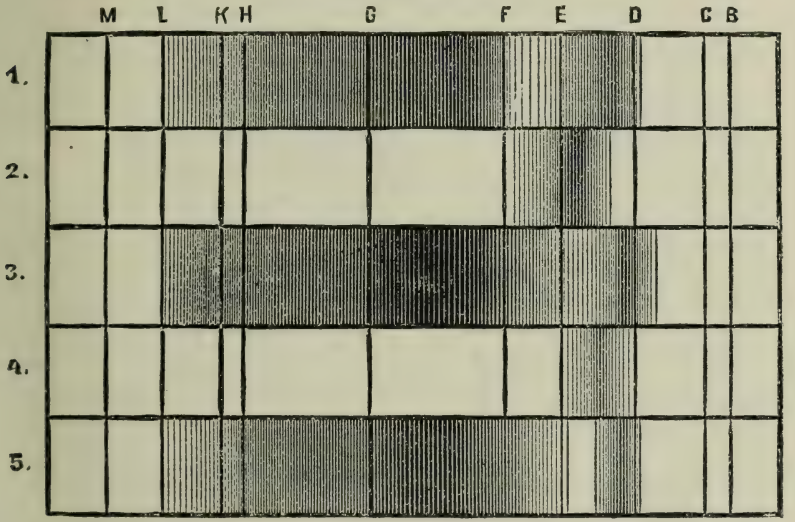
This proves that the coloring matter itself adheres tightly to the bromide of silver grain, be it to the bromide of silver, as such, or the gelatine,[1] inclosed by the bromide of silver grain.

This fact appears of consequence in attempting to explain the "optical sensitiveness."

RELATION BETWEEN THE ABSORPTION OF COLORING MATTERS AND THEIR SENSITIZING ACTION ON BROMIDE OF SILVER.

For the judgment of the connection in the process of absorption of the color matters and their sensitizing action, to which H. W. VOGEL has already referred in general outline, I chose colored dry gelatine sheets,[2] and compared the absorption with the spectrum photographs upon the like-colored bromide of silver gelatine plates. In all cases observed by me, the position of the absorption spectrum with the dry colored foil corresponded with the sensitizing maximum upon colored bromide of silver; nevertheless, a removal[2] of the latter toward the red, in comparison with the former, took place. But this removal is not always of much significance; in eosine colors the maximum of absorption of the gelatine foil and that of the sensitiveness upon bromide of silver differ in yellow green from 16 to 20 μμ.[3]

Fig. 13.



In Fig. 13, the results of some of my experiments are sketched. Spectrum 1 is the fac-simile of the spectrum picture upon bromide of silver gelatine, which was colored with bluish Eosine, obtained in direct sunlight. (Similar spectrum pictures, upon yellow Eosine and Rose Bengal, have been already represented before as curves). In 2, the absorption spectrum is a dry gelatine foil colored with the same eosine is represented, by means of a photographic view of the same upon cyanine bromide of silver plates. The *maximum of the sensitizing action of the eosine upon bromide of silver gelatine lays further toward red than the maximum of the absorption in the colored gelatine.*

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[1] The gelatine would then assist the adhesion of the coloring matter to the bromide of silver in a similar manner as do all protein bodies in dyeing cotton.

[2] Coloring matter solutions give quite different absorption spectra from dry colors. Colored bromide of silver leaves would have answered best; but as the production of such is difficult, I was satisfied with colored gelatine foils.

[3] According to the proposition of KAISER (Lehrbuch der Spectral Analyse, 1883, p. 11) I designate the undulating lengths in the millionth part of a $m\,m = \mu\mu$.

The same may be said of aniline red, as pictures 3 and 4 in Fig 13 will show, as well as of other coloring matters.

Therefore many rays pass through the colored gelatine at the less refractive end of the spectrum, which act very strongly upon the bromide of silver colored in the same way. If the silver spectrum is directed to pass through a dry gelatine foil, colored with eosine, a photographic picture upon eosine bromide of silver gelatine should not form in yellow-green, if the rays absorbed in the former would excite the light sensitiveness of the latter, as was accepted or believed by some. I obtained, under these circumstances, besides the ordinary spectrum pictures in blue, also an intense picture in the yellow at D, which answers to the maximum of the optical sensitiveness upon eosine bromide pictures; and besides, a minimum (a completely empty space) which corresponds to the maximum of absorption of the eosine gelatine (curve 5, Fig. 13).

Hereby is proven, that the maximum of sensitiveness in colored bromide of silver gelatine plates is not identical with the maximum of absorption in colored gelatine, but that the coloration of the bromide of silver has to be taken into consideration.

That the bromide of silver molecule is actually colored, I have demonstrated by experiment; for the explanation of the larger removal of the maximum of the photographic sensitiveness of bromide of silver, connected with light absorption, KUNDT'S law may be mentioned; according to which, with the increase of the refractive power of the medium, the absorption band of the inclosed coloring matter is in most cases removed towards the red end. DR. E. ALBERT has drawn attention to an analogous case in colored collodion emulsious.[1]

By this observation, I believe, can be explained also the behavior of bromide of silver gelatine, which is exposed in a still wet state, under a solution of color matter.

The coloring matter will then act as a colored screen. For example: the spectrum picture upon a bromide of silver gelatine plate, covered with an aqueous eosine solution, resembles more the picture 5 in Fig. 13 than the picture 1 in the same figure. The absorption band of the aqueous eosine solution at E keeps off the light from the bromide of silver under the same, and restrains the action upon the maximum of sensitiveness laying further towards D, which latter lies partly near the same place for dry or wet colored bromide of silver.

If bromide of silver gelatine is colored with mixtures of coloring matters, the same will often be damaged in their action, and oftentimes one or the other is seemingly suppressed. This seems to take place particularly, when the absorption band of the gelatine, colored with one component, falls beyond the sensitizing maximum of the other.

RELATIONS BETWEEN THE ABNORMAL DISPERSION OF COLOR MATTERS AND THEIR SENSITIZING ACTION FOR BROMIDE OF SILVER.

In most of the coloring matters showing a sensitizing action *abnormal dispersion* has been proven, and Dr. E. ALBERT came to the conclusion that the normal dispersion is connected with the sensitiveness. "Bromide of silver is principally affected by small wavy (blue and violet) coloring matters. Through the abnormal dispersion, rays of small undulating length are brought to the red end of the spectrum (beside the absorption band), which act strongly upon bromide of silver." In this way, says ALBERT, the removal of the maximum of chemical action towards the red end of the spectrum in an enforced manner could be explained; but this was simply a conjecture, without any further experimental examination.

For my explanations I have used Fig. 14 from Shellen's Spectral Analysis (1883). In the normal spectrum (1) rays of a gradually smaller undulating length follow from left to right. In the abnormal spectrum of a concentrated aniline red solution acting as a prism, the absorption band lays at E, and both halves of the normal spectrum appear displaced towards each other. To the right are the rays of larger undulating length (red, orange, yellow and yellow-green); to the left of the absorption band are the smaller rays (violet to blue-green). The light rays C to D

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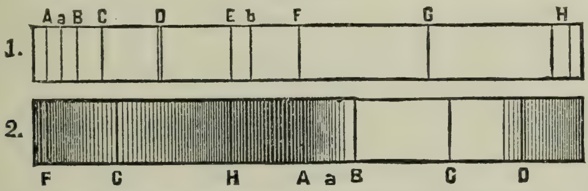
[1] Photogr. Correspondenz, 1884, p. 137.

½ E have, therefore, in the normal spectrum of the Fuchsin just the same undulating length as the rays G to H in the normal spectrum which act strongest upon silver salts.

It is now difficult to comprehend how a coloring matter should produce an abnormal dispersion in a normally produced pure solar spectrum; and with a little closer consideration other contradictions are met with.

To begin with, it appears remarkable that coloring matters give a small intense band of sensitiveness in yellow, etc., while in the normal blue and violet part of the solar spectrum they show oftentimes a long extended band without distinctly bounded maximum. In short, the sensitizing action in yellow or red should produce a similar picture to that in the blue part. Particularly on iodo-bromide of silver gelatine or iodo-chloride of silver gelatine—which in the blue end of the normal spectrum show *two maxima* in action—there should also be perceptible in the yellow end through the abnormal spectrum two maxima in the sensitizing band; this I never observed, for the coloring matter showed only one absorption band. Further, if the coloring matter would produce on a certain part of the spectrum a band of small undulating rays, the maximum of sensitiveness by a coloring matter should be different in bromide of silver and chloride of silver gelatine; chloride of silver suffering the greatest decomposition at H, bromide of silver at G to F. The maximum of sensitiveness with chloride of silver should, therefore, lay considerably less toward the red than that of bromide of silver. Experiments with Eosine and Cyanine gave negative results. The maximum of the normal spectral action of colored chloride, bromide, iodo-bromide, and iodo-chloride of silver gelatine in the blue part of the spectrum changes according to the nature of the silver salt; but the position of the maximum of sensitiveness by coloring matters in the red end is constant.[1]

Fig. 14.



The abnormal dispersion is, therefore, not sufficient for the explanation of the sensitizing action of coloring matter upon bromide of silver.

With the *fluorescence of coloring matters* their sensitizing action upon bromide of silver is not connected, according to the information of other experimentalists, and I can confirm this by reason of my own tests. There are coloring matters, fluorescing red (naphthalin red), that are also sensitizers; some fluorescing yellow (certain cosine colors) or green (fluorescin), and, on the contrary, some non-fluorescing coloring matters (cyanine, aniline red), which have a sensitizing action; in short there is no regularity in this direction.

RELATIONS BETWEEN THE CHEMICAL AND PHYSICAL PROPERTIES OF SUBSTANCES AND THEIR SENSITIVENESS TO LIGHT.

Not all coloring matters effect a relative increase of sensitiveness to light in the silver haloids toward the less refractive rays in the same degree, many even not at all.

I have tested about 140 kinds of coloring matters upon bromide of silver gelatine in from two to three different concentrations, and at least three variably long times of exposure (from 100 to 300) and could find sensitizing properties in only a fraction of them. Although the number of the sensitizers discovered by me is pretty considerable, only the smaller part of them has an intense action.

Homologous absorption spectra and sensitizing actions may appear in very narrow limits with similar chemical constitution. For example: in iodide, chloride, sulphate, and nitrate of cyanin, and in different salts of rose aniline, etc.; but this does not tell much. To the derivatives of Fluorescein this property seems to more generally belong, *i. e.*, Fluorescein and Benzyl-fluorescein (chrysolin) are sensitizers for green, the bromated, chlorinated and iodized Fluoresceins (eosine) for yellow green to yellow, but this regularity is disturbed by the vanishing small action of the nitro derivatives.

Fluorescein being a phthalic acid derivative

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[1] I do not regard here small irregular differences, which I ascribe to the influence of the atmosphere upon the quality of light.

(that is resorcein phthalein), I tried phenolphthalein (red with alkalies) and orcinphthalein (red) as well as the bromized and nitrated products of the latter; but without any remarkable success.

Roseaniline salts sensitize for yellow and orange; roseaniline sulpho acid (red) does not, whereas the sulpho acid of Benzaldehyde green (that is acid green) and Benzaldehyde green itself, sensitize. Trimethyl roseaniline, as well as triethyl roseaniline salts (Hoffmann's violet, etc.,) sensitize for orange to red; but phenyl roseaniline and their sulpho acid salts (aniline blue) are not worth mentioning.

Regular relations between chemical constitution and sensitizing action of the color matters I could not discover.

Better results were obtained with the position of the maximum of absorption of the colored light of the coloring matter and its sensitizing action upon bromide of silver gelatine. From the former, conclusions can be drawn to the latter, and it can be determined beforehand whether the coloring matter sensitizes the bromide of silver in green, yellow or red. The absorption band of colored gelatine foils is to be considered with regard to the above-mentioned removal of the sensitizing band towards the red. This holds for all coloring matters which are *sensitizers for bromide of silver gelatine.*

Now another question arises: Which coloring matters are sensitizers? I know of no better means than to obtain explanations by photographic experiments. According to my present observations, the coloring matters with a sensitizing action upon silver haloid salts have to meet the following requirements:

1. They have to color the bromide of silver grain. The coloring matters which sensitize strongly are also all so-called "substantive color matters."

2. They have to show in a dry state—upon colored gelatine, or better, upon colored bromide of silver—also in a very diluted state—an intense band in the absorption spectrum, if an intense blackening of the bromide of silver shall be effected. A small band of absorption gives also such a one during the sensitizing.

I have already mentioned that neither fluorescent appearances nor abnormal dispersion of the coloring matters explain sufficiently their sensitizing action upon bromide of silver for the less refractive rays. The supposition, that in place of the absorption band the molecules of the coloring matter are placed in energetic vibrations, and thereby also the bromide of silver, is untenable, as shown by DR. E. ALBERT. Aside from the abnormal dispersion the coloring matter molecules do not vibrate in the same place as the absorption, but a few vibrations are destroyed, and heat or chemical decomposition of the coloring matter is produced.

A chemical decomposition of the coloring matter might now be accepted, whose first decomposition products act secondarily upon the bromide of silver.[1] This view was recognized by Prof. H. W. VOGEL as being not generally correct.[2]

According to my view, the action of bromide of silver and the coloring matter increase jointly and independent of the light sensitiveness of the coloring matter.

The bromide of silver combines with the coloring matter by molecular attraction[3] and is colored. The mixed coloring matter would by itself absorb light strongly at the place of the absorption band, and would be changed in the largest part into heat, but only in the smaller part (because most of the sensitizing colors are pretty "fast") into chemical work (oxidation). The loss of light in the first case I propose to call "*photo-thermic extinction,*" that of the latter case "*photo-chemical extinction.*"[4] Bromide of silver, well mixed or combined with a suitable coloring matter, causes a large part of the light absorbed from the color matter to be transferred to chemical work, whereby the bromide of silver is drawn into the process. The tendency of the coloring matter to oxidize in light[5] is assisted by the property of the bromide of silver to absorb in light the deoxidizing bromine. If to colored substances with strong elective absorption, for the conversion of light into heat, another photo-chemical process is added, the light rays of that undulating length will also enter into action with those that caused the former. The position of the absorption band of the coloring matter remains unchanged, as equal rays are changed sometimes more into heat and sometimes more into chemical work; in quantitative relation a change of absorption has then to take place, the "photo-chemical extinction" being added to the "photo-thermic," as shown by BUNSEN in the mixture of chlorine and hydrogen (chemical and optical extinction), and MARCHAND in chloride of iron and oxalic acid. In all these cases the maximum of the photo-chemical decomposition in the spectrum is determined principally by the position of the absorption band of the colored constituent. According to the facts mentioned, I believe I am justified in formulating the following as a law for photo-chemical decompositions:

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[1] *Abney*, supported by his experiments with cyanine, expressed this view. Cyanine itself decomposes in yellow. If a glass plate is coated with plain collodion, which has been colored with cyanine, and is exposed to the spectrum, then coated with bromide of silver collodion and developed, without exposing again, a picture will appear upon the parts struck by yellow light, and where the cyanine-blue shows the absorption band. Direct addition of color and exposing afterward gave the same results (compare my "Ausfuhrliches Handbuch der Photographie," 1883, VI. Heft, Bd. 2, p. 17).

[2] Photogr. Mittheilungen. Bd. 15, p. 91.

[3] It being accepted that the coloring of fibers (wool, etc.) takes place by chemical combination with the color matter, the same can be predicted here; in the contrary case, molecular attraction.

[4] Added to this as a consequence is the "photo-electric extinction" in certain electric processes caused by light. The above designation appears to me more generally applicable and more exact than Bunsen's division into "optical" and "chemical extinction."

[5] Relatively to bromide.

The photo-chemical extinction of a mixture is determined in many cases by the photo-thermic extinction of a constituent part.

If the mixture (or combination) of a colored body of strong elective absorption power with another is decomposed in light, light rays of that undulating light will enter principally into action during the photo-chemical decomposition, which are absorbed by the former with photo-thermic extinction; by which is determined a maximum of the photo-chemical decomposition in the spectrum by the colored body. If the body of inferior elective absorption power possesses by itself a considerable light sensitiveness, this decomposition in the light will have a more or less characteristic appearance besides the one determined by the strongly absorbing colored matter.

By addition of coloring matter to certain silver salts (particularly bromide and chloride of silver), their sensitiveness for the less refractive rays, according to VOGEL's observation, can be increased, so that the mixture for these rays is more sensitive to light than any one of the several components, by which the maximum of the coloring matter action is determined by the above-mentioned law.

APPLICATION OF COLORED BROMIDE OF SILVER PLATES AND ORTHO-CHROMATIC PLATES.

Bromide of silver gelatine plates which are sensitized by addition of the above-mentioned coloring matters for any one part of the spectrum may find manifold applications; particularly for the study of spectral appearances, which, until now, could only be photographed from the ultra-violet to the green upon bromide of silver gelatine. Now they can be used easily beyond C in the red (*e. g.*, with cyanine or iodine green) with incomparably greater certainty than the so-called "red sensitive collodion emulsions."

Further, paintings, carpets, embroideries can be reproduced on the one hand with the correct light valuation of blue and violet; and on the other hand yellow and red, without the former being too light, and the latter appearing dark; which is the greatest mistake of the ordinary photographic preparations. I obtained such with bromide of silver gelatine plates colored with eosine, cyanine, rose bengal, different kinds of aniline violet, and naphthalin red; using, of course, a yellow glass before the objective for the reduction of the blue rays.

Such ortho-chromatic photographs I had already produced at the end of August, 1884, without having any knowledge of the manner of producing the azaline plates of Prof. VOGEL; a whole collection of embroideries and Aquarelles, very difficult to reproduce, but particularly old oil paintings, which till now have presented insurmountable difficulties to the photographer, I laid before the Frankfort Photo Society on September 10, 1884. The first application to the study of the absorption spectra has been described in the foregoing treatise.

Finally, I would express my thanks to those gentlemen who advanced my labors by transmission of coloring matters, particularly Prof. POHL, Dr. BENEDICT and Mr. HEIDT in Vienna, Dr. KONIG in Hochst on Main, Dr. SCHUCHARDT in Goerlitz, and also Dr. E. HORNING in Vienna, who was in manifold ways instrumental in furthering my investigations.

Translated by H. D.

INDEX TO CURVES IN FIGURES.

Fig. 6. 1. Spectrum picture upon chloride of silver gelatine with the large spectrograph.

2. The same with the small direct-vision spectrograph.

Fig. 7. 3–5. Spectrum pictures upon different modifications of the bromide of silver.

6. Upon iodide of silver gelatine.

7. Upon mixed iodide of silver gelatine and bromide of silver gelatine.

8. Upon digested iodo-bromide of silver.

9. Upon mixed iodide of silver and chloride of silver gelatine.

Fig. 8. 10–11. Spectrum pictures upon bromide of silver gelatine colored with methylviolet, violet de paris, benzylroseaniline violet, iodine violet, dahlia, gentiana violet, acid violet.

12. The same with acid green, solid green, methyl green, brilliant green.

13. With iodine green.

14. With cyanine.

15. With brom-eosine.

16. With rose bengal and ammonia.

Fig. 9. 17. Spectrum picture upon bromide of silver gelatine, colored with eosine (through yellow glass).

18. The same with cyanine and eosine.

19. Aniline red.

20. Fluorescein and ammonia, full curve wet, dotted curve dry.

21. Resorcein blue.

22. Red corallin.

23. Naphthalin red.

24. Blue coupier.

25. Safranin.

26. Chrysaniline.

Fig 10. 27. Spectrum picture upon bromide of silver gelatine, colored with acid fuchsin, resorcein blue, etc., with short exposure.

28. The same with hematoxylin, soluble Berlin blue, etc.

29. Iodide of silver and bromide of silver, colored with eosine.

30. Chloride of silver gelatine with eosine.

Fig. 13. 1. Spectrum picture upon bromide of silver gelatine and eosine.

2. Absorption spectrum of a gelatine foil colored with eosine.

3. Spectrum picture upon bromide of silver and aniline red.

4. Absorption spectrum of a gelatine foil colored with aniline red.

5. Absorption spectrum of a gelatine foil colored with eosine, photographed upon bromide of silver gelatine colored with eosine.

Fig. 14. 1. Normal solar spectrum.

2. Abnormal spectrum through aniline red.

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ROCHESTER PHOTOGRAPHIC ASSOCIATION.

REGULAR MEETING.

APRIL, 20, 1885.

President S. D. WARDLAW in the chair.

After the reading of the minutes Dr. FORBES was called upon in regard to the advantage of using glycerine in pyro and ammonia developer.

He could not say anything in regard to the origin of this developer. The glycerine had been recommended by many. His experiments showed it simply acted as a restrainer, and took the place of the bromides. Formulæ show less quantities of bromide where glycerine is used.

He had often found fog where glycerine was omitted. By increasing the quantity of glycerine sufficiently one could do away with the use of bromides altogether in the developer. He thought it simply acted as a restrainer.

Mr. WILLIAMS—In Eastman's normal soda developer there is no bromide or glycerine used.

Dr. FORBES—The sulphite of soda took their place, and was the restrainer.

Mr. WARDLAW—Some samples of sulphite of soda would act as a restrainer.

Mr. LEARNED—Has the glycerine a tendency to reduce the number of air bubbles?

Dr. FORBES could not say.

Mr. LEE—How long will the pyro remain active when dissolved in water?

Dr. FORBES could not say, but it would keep indefinitely dissolved in alcohol.

Mr. LEE—Would it be safe to make up a pound in water?

Mr. WARDLAW thought not, as business was at present. Questionable if it would be judicious to purchase a pound.

Upon the question of whether dry plates should be retouched before or after varnishing, Mr. KNAPP thought they should be retouched before, and then one had a chance to retouch again after varnishing. All seemed to agree on this subject.

Mr. FOX said he considered it an advantage, as often with wet plates he had found trouble in retouching sufficiently with one process.

In answer to the question: "What is the cause of black specs like comets on gelatine dry plates, which show only after fixing?" Dr. FORBES thought they were caused by particles of iron combined with the pyro developer.

Mr. WARDLAW—It often comes from particles of iron in the pyro. He had never noticed them with an old fixing bath, and thought the particles of iron were destroyed when the hypo bath became old.

Mr. LEE had noticed that the spots seldom appeared when fixing vertically in a fixing box.

Mr. WARDLAW thought they were formed immediately on entering the fixing bath while a portion of the pyro developer was in the film.

Mr. BANNISTER—Would dry pyro have the same effect?

Mr. WARDLAW thought not.

Mr. LEE—Is citric acid a bleacher of iron stains?

Mr. WARDLAW—Yes.

Mr. WARDLAW produced negatives showing the stains, and all seemed to agree that they were due to small particles coming in contact with the pyro developer.

Mr. DUMONT read a communication from the Boston Society, requesting an exchange of lantern slides.

Dr. FORBES kindly offered his laboratory for the proposed lantern exhibit of the association, which will probably take place early in May.

After changing regular meeting night to alternate Fridays, the meeting adjourned.

W. H. LEARNED,
Secretary.

SEMI-ANNUAL MEETING.

MAY 1, 1885.

At the above meeting the following officers were elected for the ensuing six months:

President— S. D. WARDLAW.

Vice-President—CHAS. T. POMEROY.

Secretary—W. H. LEARNED, 16 State street.

Treasurer—J. M. FOX.

Finance Committee—CLARENCE WILLIAMS, C. F. HOVEY and JOHN E. DUMONT.

Ex. Committee—A. M. BROWN, H. D. MARKS, *President, Secretary and Treasurer* (*ex-officio*).

W. H. LEARNED,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

MAY 5, 1885.

The meeting was held in the Chemical Lecture Room of the Cooper Institute; *President* NEWTON in the chair.

The Secretary acknowledged the receipt of five numbers of the *Photographic Times*, two numbers of ANTHONY'S PHOTOGRAPHIC BULLETIN, two numbers of the *Chicago Eye*, and a book from the Scovill Manufacturing Co., "*First Lessons in Amateur Photography*," by RANDALL SPAULDING.

A letter from the Society of Amateur Photographers of New York, regarding the next meeting of that Society, was read, and a letter from the passenger agent of the Lake Erie and Western Railroad, relating to the rates to and from the Photographic Convention to be held at Buffalo, in July, was also read.

Pres. NEWTON—In reference to this communication from the Amateur Society of this City, I would say, that it is not open only to members, except as suggested here, by ticket. Any one wishing to attend the meetings, or this meeting especially, can do so by applying to the Secretary, Mr. Canfield, 1,321 Broadway, for tickets.

In regard to the communication from the passenger agent of the Lake Erie and Western Railroad, we might have a committee appointed to see this gentleman and arrange terms with him.

Mr. GARDNER—I move that the President of this Association see the agent and ascertain what it will cost for the members of this Association, or any member of the photographic fraternity, to go to Buffalo, and report at our next meeting.

The motion that the President call upon the agent and ascertain what conditions and terms can be made in reference to carrying members of this Association to Buffalo and back was carried.

Mr. GARDNER—The Executive Committee have to report that Dr. Miller will lecture this evening on Photo-Microscopy. Mr. Taylor has promised to lecture on Photography, or some of its branches, at our meeting in June; the subject will be announced later.

Pres. NEWTON—At our last meeting I told you that we should probably hold our next meeting in the building of the Mercantile Library, but that has not been fitted up properly yet, and if it is in order before our next meeting, in June, you will be duly notified.

MAURICE N. MILLER, M. D., of University Medical College, N. Y., then read a paper on

THEORY AND PRACTICE OF PHOTO-MICROGRAPHY.

If an illuminated translucent picture on a plane surface be placed at a considerable distance from a convex lens, a much diminished image will be formed at a point near the focus of the lens.

If a minute and brightly illuminated translucent object be placed near the focus of a convex lens, an enlarged image will be found at a considerable distance from the lens.

The conditions described in the first proposition, using an ordinary photographic negative, a microscope objective, and a sensitive film to receive the image, are required in the production of micro-photographs.

The second arrangement, introducing a mounted microscopic object, a microscopic objective and a sensitive film, presents the conditions necessary in the production of photo-micrographs. A micro-photograph is simply a reduced copy of a photographic negative ; while a photo-micrograph is the fixed image of an object greatly enlarged by the microscope. It is with the production of the latter that we are engaged this evening.

In order that we may the better appreciate the conditions required in the production of enlarged pictures of minute objects, let us examine the simplest arrangement that may be employed for such purpose.

First, a microscope stand is required. This is placed on a table so that the optical body is in a horizontal position. The eye-piece is now removed and a long bellows camera-box is connected with the microscope tube so as to make a light-tight joint. The whole being firmly fixed to the rigid table, the latter is placed so that the sun may shine on the mirror of this microscope and on this alone. (Let me say just here that it is with translucent objects only that we have to deal. Little effort has thus far been directed toward the production of enlargements of opaque objects, and, inasmuch as we can operate with the lowest powers only in such work, it is not probable that the results thus obtainable will ever be much sought for.)

We now proceed with the description of the steps necessary to produce an enlargement with our simple apparatus. A microscopic object is placed upon the stage and then held in position by the spring clips. (I shall have something to say about the preparation of these objects later on.) A piece of blue glass is now placed beneath the stage and the mirror so adjusted that the sun's rays are brought to a focus a little beyond the object to be photographed, and, for illustration, we will take a mounted specimen of a small insect, which will afford us sufficient differentiation with moderate amplification.

A 1-inch well-corrected objective is put on the microscope, and we adjust the camera so that the ground glass is about eighteen inches from the stage. Now, covering the head with an opaque cloth in the ordinary way, we reach the coarse adjustment, and obtain an image which we then sharpen with the fine focusing screw. You will observe that the camera is not too far distant, and we easily reach the milled heads of the focusing mechanism.

By the time we have arrived thus far it is probable that the sun has moved, or more correctly, the earth has progressed so that the mirror needs another adjustment in order that the picture may have purely central illumination. Well, we give the mirror a final touch, substitute our sensitive plate for the ground glass, and expose. With the low power we are using there is plenty of room for a little cap over the nose of the objective, and this affords the best simple means of exposure. If higher powers be employed, and consequently less distance between the lens and the object, a swing shutter must be introduced within the camera. Well, what is our result? We develop, and, if we have been moderate in our desires, using a low power—not endeavoring to amplify beyond thirty diameters—we will get moderately successful pictures. Our principal difficulty is to get an even illumination. The center of the field will, perhaps, be over-exposed, while a ring of darkness appears without this point. This is due to two principal causes, and one of them is easily eliminated. Reflections come from the inside of the tube, or from the mounting of the objective. Even the edge of the stage diaphragm may be bright enough to cause trouble, and the edge of the mirror-mounting introduces another source of unequal illumination. It is not enough that the aforementioned places be black—they must be *dead black.* I will allude to this again. But a much more serious cause of unequal illumination is found in the scattering rays from the mirror itself. The whole method is deficient.

Let me now describe, in contrast with the above, what I regard as the very best arrangement that can be made, with ample means and convenient surroundings. We will then compare the two, and see how far we may be able to dispense with the more expensive and complicated apparatus.

The first question to settle is the source from which we must obtain our light; and I unhesitatingly answer, directly from that great source of all light—the sun.

Electricity comes nearest to sunlight in value for photo-micrographic purposes; but unless the operator has a very large stock of patience, I advise him to have nothing to do with it. The only form that is of the slightest use, except for low amplification, is that evolved from the arc lamp, and thus far we have no regulators that are certain to remain in the optical axis of our instruments for a single second. The incandescent lamp is of no use, except as previously indicated for very unambitious attempts with low powers. I have traveled most thoroughly and conscientiously this electric road, and let me sum up my advice to you in this little word—*don't!*

The calcium jet is far better for our purposes than the electric light. It is easily regulated, can be kept steadily in adjustment, but it is a very expensive luxury. Besides this, there is a certain hardness, a cold black and white, that is inseparable from this mode of illumination. I used to think I could pick out calcium-light negatives from pictures made with other modes of illumination. I don't know that I would be willing to say as much now, but that there is a cold chalk-and-charcoal feature to prints from such negatives I presume many besides myself have noticed.

The minor methods of lighting—by oil, gas, etc.—do not deserve any consideration at our hands at this time. We are engaged in the attempt to produce the very best results obtainable, and I know very well that no amateur is going to be satisfied with silhouettes made with a dark lantern attached to a camera box. I never knew of a lens with power enough for an amateur. Far be it from me to discourage small beginnings; but I want you all to aim high, and never rest until you can say your work is good enough to offer as patterns for others to equal.

In presenting what I regard as the best arrangements for our work, it will, in reality, be a description of the apartments belonging to my new laboratory, now in course of construction.

First, a room which has one window, at least, facing the south, is a great desideratum. But, as an illustration of what may be done under disadvantages, many of you may, perhaps, be surprised to learn that the laboratory of the late Col. Woodward was so located that all of his work had to be done before eleven o'clock A. M., on account of the shadow of an adjoining building.

Premising that we have a southern exposure, we must next be able to secure absolute darkness in our room. This is best accomplished by inside shutters of painted wood, although all the windows save one may be darkened in any way thought desirable. Let me again say that nothing short of absolute darkness will answer. With our present highly sensitive plates, the twilight of our old-fashioned dark rooms will not answer. Our one room may possibly answer, not only for the purposes of an operating apartment, but also serves for the development and preparation of the plates. Indeed, we may work quite conveniently, using the room in this double capacity, if we have at our command one or two dark boxes in which to allow slow developments to proceed while we are otherwise engaged, and while the room is lighted. Of course, a separate dark room is preferable. Attached to the window-ledge, and outside the window, level with the bottom of the latter, we have a strong, rigid shelf for the heliostat. This shelf should be so strongly affixed that it is in reality a part of the building. Mine is of slate (although painted oak answers very well), and the length is equal to the breadth of the window, while the width should be at least twenty inches. To the window-frame, which is, of course, the one with the southern exposure, we must affix two inside shutters. By this I mean a double shutter, opening vertically in the center of the window. The left half of this shutter, as you face the window, need not be hinged, but fastened permanently and rigidly to the window-casing. The right-hand shutter is hinged to the casing, and must be well fitted, so that, when closed, the room is instantly in perfect darkness. This requires the services of a good mechanic.

Another shelf is required, inside our room, for our microscope and accessories, and for this purpose a pine plank, two inches thick and ten by twenty-four inches, answers perfectly. This is fastened to the bottom of the window-casing by one end, and the other end is supported by a brace or leg to the floor. This should be a permanent fixture, or at least so fastened by screws as to be perfectly rigid. I should have said in the beginning that the building, if in a large town, ought to be on a good foundation and free from tremor. Our large buildings that tremble with every passing truck will not answer the purpose.

One more fixture, and we are ready for the placing of our apparatus. We require no camera box other than our apartment—we simply need a frame to hold the ground glass and the plate-holder. A frame of this sort can be easily made, or a camera box may be utilized by removing the front. This should be affixed solidly to a stand that may be raised or lowered—an iron camera stand answering the purpose perfectly—especially if, after the proper position has been obtained, it may be readily and securely fixed to the floor.

Let us now select and arrange our apparatus. We are to use sunlight—we must have a heliostat. Of the almost numberless forms of this, ranging from the most simple to the most complicated, I unhesitatingly give the preference to the simple and inexpensive instrument invented by Mr. Rutherfurd, and brought to our notice by one of our oldest and most useful members—Mr. D. C. Chapman. This apparatus is familiar to most of you. It is described in *Silliman's Journal*, 1863-65, and I will give the essential features. The works of an ordinary Yankee clock, with balance, are made to rotate a steel mandrel which is inclined so as to present a continuation of our polar axis. This mandrel carries the mirror. The entire apparatus can be made well and solidly at an expense of not more than fifteen dollars. It is easily adjusted, and when regulated performs with sufficient precision for the best work. Secretan, of Paris, makes an instrument on this plan, entirely of metal, which is necessarily less liable to loose adjustment by exposure than one made partly of wood. Inasmuch as we do not work except in pleasant weather, the heliostat of Chapman will remain in adjustment for a long time if properly cared for when not in use.

Time affords me no opportunity to say anything here about the adjustment or regulating of this piece of our apparatus. I cannot refrain, however, in passing, from suggesting that a great deal of valuable time will be saved by carefully regulating the clockwork before attempting to use the heliostat in actual work.

Having adjusted the apparatus, we find the proper position for it on the shelf outside our window, and by some means affix it so that we may always be sure of securing the same position. This is preferable to attempting to box it in, as the storms are almost certain to injure and alter it. The heliostat is so placed that a beam of sunlight the size of the mirror, say 4″x8″, is projected against the outside of our stationary window shutter at a point about one foot above the window ledge. The mirror should be of glass, silvered, and not covered with amalgam. At this point in the shutter a hole about six inches square is to be made, with cleats entirely around it, inside, so that with buttons we may quickly fasten therein a piece of board, which, as we will see in a moment, will carry our secondary mirror. You will observe that the beam from the mirror of the heliostat will pass through the hole in the shutter at an acute angle, and so on up to the ceiling of the room, and this is precisely where we do not want it. We have got the light into our room, however, and if everything be working as it should, the spot of light will remain unmoved for hours. But we want to bend this beam so that it may come through the opening in the shutter at right angles to the same, and so pass through the microscope, etc. This we accomplish by means of a second mirror, also silvered, which is placed just outside the square opening in the shutter, and is attached to the perforated board which fits therein. This mirror must be susceptible of movement in two directions, so that we may always catch the beam from the primary mirror, and direct it with accuracy and delicacy as we desire. This is best accomplished by using the arrangement employed in the old solar microscope, and which is also used in solar photography by reflection.

Suffice it to say that the mirror with its attachments is affixed to our perforated board, so that when the latter is in place we may have the mirror completely under our control, as the rods which accomplish the adjustments pass through the board and terminate in milled heads inside the shutter.

Our light is at last passing through our shutter and into our room parallel with and above our shelf. The latter must be so adjusted for height that when the microscope is placed thereon, and the optical body placed horizontally, the beam of sunlight may pass through the optical axis of the lenses. As to the microscope, the great desideratum is solidity. You will have noticed that this solidity crops out very frequently in my remarks. It is the natural outgrowth of the use of apparatus which the mechanician seems to think cannot combine solidity with delicacy of adjustment.

The microscope should have, first, a mechanical stage; second, a centering sub-stage; and, third, a fine focusing adjustment that does not alter the length of the optical body. The tube of the microscope should be large and short. Schrauer, of this city, makes a special stand for this work that answers our purpose admirably. Cleats are affixed to the shelf so that the microscope may be moved to and from the shutter, but remain fixed as far as its lateral adjustment is concerned.

Our beam of sunlight coming through the shutter we will suppose to be about two inches in diameter. Now is our time to correct one of our original defects with the first simple apparatus. The scattering rays must be picked up and be made to arrange themselves in proper order. In a short piece of tubing fastened in the opening in the shutter we slide a second piece of tubing, which, in turn, carries a plano-convex or double convex lens of nearly the diameter of the sunbeam. I believe nothing is gained by more light; even an inch is probably sufficient, and an achromatic lens here is not only useless but less serviceable than the single glass. This lens should have a focus of not less than eight to nine inches. Immediately in front of this lens, and supported on a little stand, we place a cell containing water that has previously been boiled. This cell is best made by separating two pieces of thin plate-glass by a frame of wood one-half inch thick. Bore a hole in the upper side of the frame, saturate it with melted paraffine, and while hot press the glasses against either side of the frame, and keep them in place by means of two rubber bands or by thin binding wire. This makes the most perfect and permanent cell with which I am acquainted. Just before the beam of light is brought to a focus by means of the lens, another cell should be placed, which must be filled with freshly filtered solution of ammonio-sulphate of copper. This cell may rest on a stand by itself, although a more elegant way is to attach it by a mounting to the sub-stage.

The sub-stage is affixed to a good achromatic objective. A good one-half inch objective answers an admirable purpose, although for special work the condensers of Abbé and others can be used. The microscope should be so placed that when the achromatic condenser is in proper position the cone of rays from the primary condenser, or the plain lens, may just cover the large or bottom lens of the former. This is an important adjustment, and in order to secure it, and at the same time keep the microscope stand immovable, I have added a rack and pinion movement to my primary lens.

It might now be supposed that we might place an object upon the stage and an objective on the microscope and proceed to work; but should we do so we will find that more light will reach our plate from extraneous sources than will pass through the microscope. Several methods have been devised to cut off these stray rays by means of curtains; but they are all cumbersome, unsatisfactory and inefficient. I have devised a little arrangement which answers the purpose admirably, although it must be seen to be appreciated. I construct a light frame-work of wood which completely covers the apparatus on our shelf, being of the width and length of the latter, and about twelve inches high. This frame, except the bottom and ends, I cover with straw board. This, if put on wet, glued and well tacked, will, when dry, be as tight as a drum. The sides are hinged so that when let down completely expose the microscope and all the accessories, rendering the adjustments of easy accomplishment. One end of the frame (or box, as it now presents) is fastened tightly to the shutter, while the opposite end through which the end of the microscope tube projects is covered with broadcloth or velvet, with a perforation and drawing-string through which the tube passes.

Now we may place our object upon the microscope stage. The heliostat has been steadily following the sun, and our light requires no adjustment save an occasional touch of the secondary mirror. The light passes through our first cell and the water absorbs the heat and renders it safe to our valuable objects and objectives. Remove the eyepiece, and, bringing the camera frame into position, proceed to make your adjustments. We find that standing by the microscope, the ground glass frame, perhaps two feet away, the image appears very weak and faint. This is because the light is absorbed by or passes through the ground glass. Inasmuch as our preparatory, yes, final adjustments, are made while we are at the microscope and not at the camera, we place a piece of white cardboard in front of the ground glass, and projecting the image upon that, it is seen clear and distinct. We can remove our blue cell as we do not require it just now, and proceed with the mechanical stage to find the portion of the object we wish to reproduce. Let me here observe that a good slide of dried human blood makes a splendid object to begin upon, as it will quickly show faults of lighting. This is the time to look out for internal reflections; remove the draw tubes and varnish the inside of the tube with good negative varnish. When it becomes tacky, allow the smoke from a kerosene lamp, with the wick turned up and the chimney removed, to coat the varnished surface. Or line the tube with paper so varnished and smoked. So cover every surface that you regard as liable to prove troublesome.

Well, everything about the image on the paper screen appears as it should, and we are now prepared to complete the focusing, yet hardly so, for after having replaced our blue-cell, shut the microscope in and move our position to the ground glass. We find we cannot reach the milled head of the fine adjustment of the microscope. So we require to affix a little grooved pulley to our shelf which shall carry a light gum-elastic belt over the milled head of the fine adjustment. The latter should also be grooved to receive the belt. To the axle of our grooved pulley is attached a light rod which passes back to the camera. Now we can assume our photographic position and finish the focusing.

The question will be asked, "How far distant should the ground glass or sensitive plate be from the microscope?" To this question, only a general answer can be given. The only thing gained by distance is amplification. And just here you must appreciate the difference between amplification and magnification.

If you desire increased detail in your picture you can only secure it by using higher power in the objective. Do not attempt to make great blurred images by removing the sensitive plate to a great distance. With your screen at a distance of two feet from the microscope stage, employing a first-class one-eighth-inch objective, you may get from 800 to 1,000 diameters, ample for your first twelve months' work. Indeed, I would advise beginning with a good quarter-inch objective, and about eighteen inches distance.

In ordering our steps, you may have noticed that I removed the eye-piece, and I mean to keep it so removed. I have never seen an instance where the introduction of the eye-piece was desirable; and I have seen a great many errors and imperfections introduced by the employment of it. If, however, you will insist upon using the eye-piece, let me caution you—see to it that no spec of dirt, however small, remains on either lens, for the slightest fleck of dust is sufficient to make an ugly mark on the negative. This precaution should prevail with the mirror surface as well. Let them be thoroughly cleaned before commencing your day's work.

Now, how long shall I expose? No earthly intelligence can answer this question for you. You will, after a time, be able to look at the image on the ground glass, and judge with considerable accuracy as to the length of exposure—and it is just this experience alone which will enable you to so judge. With our present facilities, and with moderate amplification, the drop-shutter can be used—although it is better to diaphragm down the light and expose longer. The best exposure is a little flap of velvet hanging over the eye-piece end of the microscope tube, as it may be lifted and the exposure made without danger of disturbing the adjustments. When it is not required it is turned aside, and so held by a hook-and-eye.

Now, in what way can we modify our apparatus, and lessen the expense, without materially affecting the final result?

I am perfectly assured of one thing: for results that will prove satisfactory to the conscientious amateur, I believe that the darkened room cannot be dispensed with. Anything short of this is shaky and unreliable, besides tedious, in consequence of the endless running to and fro from the stage of the microscope to the screen of the camera.

With our gelatine plates, for a very large range of work, the heliostat can be dispensed with. It is a luxury, and indispensable if very long exposures are necessary. But a great deal of work can be done with the secondary mirror alone, although the constant adjustments are tiresome.

The next absolute luxury — and this is purely so—is the expensive mechanical stage. If the student is prepared to draw liberally on a very large stock of patience, the mechanical stage may be omitted. The modern glass stages, moving as they do, easily and with ready control, answers fairly well for the more expensive attachment.

The centering sub-stage for first-class work cannot be spared. Much low-power work can be done with a plain sub-stage, however.

To sum up, therefore, we may say that a great deal of very fine work can be done in photo-micrography with the secondary mirror, the centering sub stage and an ordinary microscope stand. I should rather discourage attempts that had not these facilities in contemplation at least. Much amusement can doubtless be secured with less than I have indicated; but it is not to these idlers in science that I am speaking here.

I desire now to refer to some matters connected with our subject, more especially the outgrowth of my practical work.

As to lenses. What objectives are best? I think I can safely say this: As a rule, the lens that is found to produce the very best photo-micrographic pictures will also be an excellent lens for general microscopic work. It is no longer necessary to look for lenses corrected for photography. This idea is a delusion and a snare. If you have a lens that works well on tissues, you need not be afraid to try it on these subjects in photography. If you have a lens specially made to resolve the *amphipleura pellucida*, why, try it on *amphipleura*, and don't try it on anything else. Occasionally you will find an objective that, for some reason unknown to men and opticians, does excellent photographic work. You order a duplicate, and it is a dead failure. I have in mind an instance in which the great and lamented Tolles made three several and separate attempts to duplicate one of his previous lucky hits, and signally failed. I can—and I say it with regret—only say try. There is no certainty about it. Of one thing you may be sure: a poor, cheap lens will never make successful photographic pictures. I have a one-sixth by Miller Bros., not specially made for photography, which, they frankly tell me, they would not guarantee to copy. The most successful pictures the world has thus far seen have been made with the objectives of Powell and Leland, Tolles and Zeiss, although the great master of this art died before he could give a final verdict respecting many of the latter maker's lenses.

From the little I have worked with the very low-priced lower powers of this cunning optician, it seems probable that they will prove most excellent lenses for our purposes. There is no necessity, however, in importing lenses, unless it may be in certain instances where the expense is the most important item, for the objectives of William Wales, of our own city, have produced some excellent pictures, and we owe much to his patient work in the direction of producing lenses for this special work. I must, however, repeat my original opinion, that success will more generally be attained by trying first-class working-glasses than in attempting the construction of lenses specially corrected for photography. I have no special theory on the matter. The statement is made only as a result of experience with very many trials with almost every known maker. For low amplification almost any first-class microscope objective will answer. It is only when the higher powers are required that the striking difference in objectives will be apparent.

It will not be found sufficient to simply attach a lens to our apparatus and proceed, leaving the glass to work out its own salvation. The same delicate correction for thickness of cover, the same careful preparation of immersion fluids and the same patient adjustments for illumination are required in photo-micrography as in ordinary microscopy.

The introduction of polarized light affords a method of producing beautiful results, especially in photographing rock and mineral sections. The polarizing Nicol is placed between the water and the blue cells. It should have a diameter of at least 1¼ inches, and had best be made after one of the modern formulas producing short prisms, as there is always sufficient loss of light in this work without the introduction of unnecessary elements of absorption. The analyzer should be as large as is possible to use comfortably, certainly sufficiently so to cover the posterior combination of the objective completely; if it be smaller the field is much reduced. The small polarizing attachments usually supplied with observing microscopes are totally inadequate to our present needs. The field is too small and the amount of light passing through the combination insufficient.

Respecting photographic processes adapted to photo-micrographic work, it becomes me to say little to such an audience as this. The factors that produce the full detailed portrait negative are only necessary. The rapid working gelatine films will enable the present worker to enter a field that has been entirely unexplored by our predecessors armed with the silver bath alone.

It may not come amiss to say something just here about the microscopic objects themselves. Each worker will select a field for himself. Diatom pictures, so far, take the lead. It is probable that the great value of photo-micrography in the future will be exemplified in the production of illustrations in the minute structure of living organisms, both in their healthy and diseased states—*i. e.*, normal and pathological histology. The one great feature of our productions in this line is their absolute truth to nature. The pencil of the retoucher is not here available. The pictures are not always beautiful—there is no opportunity to select a fragment here and there, and with perhaps a slight draft on the imagination, as in the composite picture for the wood engraver. For this reason, rather than the great expense, photo-micrographs have never been very popular as general book illustrations; several beautiful volumes so illustrated on anatomical subjects have, however, been widely distributed among scientists. The inestimable value of our art is already seen in the domain of bacteriological investigations; and already do we look with suspicion upon the engraved illustrations of these minute though potent organisms.

The same conditions that produce a beautiful view are necessary in our microscopic object. If we have an object affording plenty of clear, sharp detail in proper color, we may reasonably expect good pictures. And just here presents one of our most serious difficulties. Microscopic objects are, as a rule, artificially colored. As a rule, however, we are not limited in the selection of our dyes; in certain work we are so hampered. Tissues are dyed or "stained" in order to sharpen the differentiation. The dye attacks one part of a minute animal or vegetable structure very strongly, while other portions are only slightly colored. The dyes most commonly used are those made from carmine and logwood. The aniline dyes are also used—almost exclusively so in bacteria staining. Carmine-tinted specimens are tolerably well adapted to our work, although the contrasts are feeble. The very best staining for photo-micrographic reproduction for tissues in general, there being no universal process, is that obtained with properly prepared logwood solution, the sections having been subsequently tinted slightly with eosine.

Many complaints come to me regarding the logwood staining, and as often employed it is valueless, inasmuch as the resultant tint is blue. This is a fault of the operator, the proper staining containing sufficient non-actinic color to give good differentiation. For fresh tissues, especially epithelial structures, the picro-carmine with the yellow of picric acid will give good photographic contrasts. Insects and parts of the same are usually unstained, and present sufficient contrast. The most striking popular productions will be obtained in this direction. In micro-organisms we are, unfortunately, sometimes unable to select our tint. Certain peculiarities of composition render them amenable to particular dyes, and we have little choice. Certainly strong contrasts are not to be expected with extremely minute translucent points or lines of a faint blue tint on a white ground.

America has, so far, taken the lead in photo-micrographic work. Indeed the late Colonel J. J. Woodward, in whose death the scientific world lost an enthusiastic, indefatigable and highly intellectual worker, was almost the father of high-class photo micrography. His publications have done more than all other causes combined to stimulate endeavor in this important branch of illustrative art. May I not be allowed to hope that you are not willing to be satisfied with simple mediocrity, but that those now commencing this work will aim, not to only equal what has already been done, but to secure results far in advance. It was in the hope of stimulating such endeavor that I consented to appear here on a subject that is of interest to only a portion of our number.

MR. EHRMANN—I would like to know the object of the blue cell.

MR. NEWTON—To cut off the visual rays or the non-actinic light.

After a little discussion on the subject of Dr. Miller's paper, an excursion, to take place some time during the summer, was talked of, after which the meeting adjourned.

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SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THE regular meeting of this society was held at the rooms, 1260 Broadway, on Tuesday evening, May 12; *President* BEACH in the chair. The members were called to order at 8.30. The President announced social meetings May 20 and June 3, and a special meeting May 26, when the first critical lantern exhibition will probably take place, for which he requested members to prepare slides.

The Secretary read a letter from Mr. Robert H. Redfield, Secretary of the Photographic Society of Philadelphia, accompanying the announcement of their proposed exhibition; part of a personal letter to the President, from J. B. Vieira da Cruz and Miguel Malheiro, regarding the exhibition to be held at Oporto, Portugal, September and October, 1885, and a letter accompanying a number of fine views sent to Mr. Beach by Mr. Henry London, of San Francisco, which were greatly admired for their artistic qualities, and were rendered additionally interesting from the fact that the emulsion was made and the plates coated by Mr. London. Mr. Beach said he expected to receive particulars regarding Mr. London's formula shortly, and would present them to the Society. The attention of the members was directed to copies of the circulars of the exhibition referred to, which had been posted in the room.

Synopsis of the minutes of the last regular meeting was read, and, on motion, adopted as read.

Messrs. George R. Allerton, William T. Leman, Dr. A. Hager and Dr. E. P. Huyler were proposed and duly elected active members of the Society. Reports of committees were then read by the Secretary.

REPORT OF COMMITTEE ON DRY PLATES.

MR. PRESIDENT: Since our last meeting the committee have to report that they have received two packages of plates from Dr. S. C. Passavant, manufacturer of the Passavant Dry Plates, San Francisco, Cal.

They would recommend that members bring, or send to them through the President, specimens of plates from each box which they may purchase of a different emulsion, in order that the plate and emulsion may be tested.

(Signed) H. J. NEWTON,
Chairman.

New York, May 12, 1885.

In connection with this report, a letter from Dr. Passavant was referred to, in which he states that he uses the pyro-potash developer, which he has advocated for two or three years.

The report of the Committee on Books and Current Publications acknowledged the receipt, since last meeting, of the following accessions to the library:

Silver Printing on Albumen Paper (W. H. Potter), from the author, through F. C. Beach.

Le Photographe en Voyage (C. O'Madden), and the Photographic Almanac, 1859, from C. W. Canfield.

ANTHONY'S BULLETIN, Vols. III. and IV., bound.

Philadelphia Photographer, Vols. VII. and VIII., bound.

Art of Photography (Snelling), 2d edition and 4th edition.

How to Make Pictures (Roche).

Hardwich's Photographic Chemistry, 4th edition.

Secrets of the Dark Chamber (Davies).

Dictionary of Photography (Sutton & Dawson).

Treatise on Photography (Lerebour).

Light (Lewis Wright).

Amateur Photography (Tapley).

Primer of Art (Collier).

Sketching from Nature (Rowbotham).

Gesammtgebeit des Lichtdruck's (Husnik).

Handbuch der Photographie der Neuzeit, and Handbuch die Photokeramik (Julius Kruger) from Jos. S. Rich.

A portrait of Mr. F. C. Beach from Mr. Needham, and a series of twenty instantaneous views from Mr. Newton.

Also the following books loaned to the Society:

Photographic Art Journal (Snelling), Vol. I.

Daguerreian Journal (Humphreys), Vols. I. and II.

Photographic World (Wilson), Vols. I. and II.

Photographic Times (Scovill Mfg. Co.), Vols. I. to V.

Philadelphia Photographer (Wilson), Vols. VIII. to XII.

REPORT OF COMMITTEE ON INCORPORATION.

Report of Committee on Incorporation was as follows:

MR. CHAIRMAN: In accordance with the motion made at the meeting of April 14, that this committee should examine into the advisability of the society becoming incorporated under the laws of the State of New York, we beg leave to report that we have given the matter careful consideration, and find that under the act passed May 12, 1875, chapter 267, a certificate of incorporation can be obtained by this Society on filing the papers required by the act, in which shall be stated the name, the object, and the number and names of the trustees or managers for the first year.

The society will then be capable of purchasing, leasing, or holding real and personal property, and receiving property by will or bequest.

The trustees will be *jointly* or *severally* liable for all debts due from the society or corporation contracted while they are trustees, provided said debts are payable one year from the time they shall have been contracted, and provided a suit for the collection of the same shall be brought within one year after the debt shall become due and payable.

In order to correct any misapprehension regarding the meaning of this provision we took pains to secure legal advice concerning the words, "The trustees will be jointly or severally liable for all debts," and were informed that the object of this wording was to enable a creditor to single out any one of the trustees (if he so desired) and bring a suit against him for the collection of a claim.

If successful the trustee would have to pay the bill; and though this would seem to appear unjust, still he had a remedy.

He could first call on the remaining trustees to voluntarily pay their proportionate share of the claim. If they then afterward refused to reimburse him, he was entitled to bring what is called "an action for contribution" against all of them, and in the end they would have to pay.

It therefore follows that while any single trustee may be held liable for the debts of the society, he has the right to compel all of his fellow-trustees to equitably share in the payment of the same.

A sworn statement must be filed in the month of December each year, giving the names of the trustees and officers, and also an inventory of the property, effects and liabilities.

These are the main conditions or facts in regard to the matter of incorporation.

As this society is at present constituted, the law provides that the President or Treasurer can maintain an action for recovering property, or they may be proceeded against as representing the property of the members.

Unincorporated or voluntary associations within the State of New York are regarded by the courts as standing upon the same footing, so far as the rights and liabilities of its members are concerned, and subject to the same legal rules as incorporated societies, except the right to have and use a common seal.

Under certain circumstances, the members may be individually sued or may maintain an action.

Your committee have ascertained the costs of the official papers and their filing to be about $22, which, with the attorney fees, will make the total expense reach about $35.

In view of the advantages to be derived from incorporation, your committee are of the unanimous opinion that this society should become incorporated, and advise that they be given power to have the proper papers prepared and placed on file as required by law.

Respectfully submitted,
F. C. BEACH, *Chairman.*
C. VOLNEY KING,
GILBERT A. ROBERTSON.

NEW YORK, May 12, 1885.

Mr. PRAY moved the adoption of the report as rendered.

Mr. NEWTON said that this was a step that should not be taken in a hurry. The trustees will be held personally liable for the debts of the Society under the law, and will not, as in the case of manufacturing corporations, be relieved of this responsibility if they comply with the law in filing reports, etc. He should take it for granted that all who voted "aye" thereby signified their willingness to accept the office of trustee if called upon to do so.

Mr. PARTRIDGE suggested that unless the act of 1875, quoted in the report, contained a repealing clause, some previous act, less stringent in its provisions, might be taken advantage of.

Mr. RIPLEY thought the laws were simple and explicit, and that there would be no difficulty in securing the incorporation of the Society if they so elected, and called for the question.

The motion to adopt the report was then put and carried.

Mr. WALKER made the following motion: "That the subject of incorporation be referred back to the committee, who, with the Executive Committee, shall have power to effect the incorporation of the Society."

Mr. PRAY said he was absent at the last meeting, but had gathered from the synopsis of the meeting, as read by the Secretary, that the revision of the by-laws was also contemplated. He considered suitable by-laws the safeguard of the trustees, and with such all objections to incorporation will be removed.

The PRESIDENT then introduced Mr. W. K. Walmsley, of Philadelphia, who read a paper on "Photo-Micrography by Lamp-Light" (see next number of the BULLETIN), which was listened to with attention and received with applause.

At the conclusion of the paper a recess was taken, during which the room was darkened, and about seventy-five lantern slides made by Mr. Walmsley from his negatives of microscopic objects were thrown upon the screen. These consisted of entomological, anatomical and botanical preparations, and were greatly admired.

Among the slides which were shown were cheese mite (x 250); trichina spiralis, encysted and also isolated (x 250); crystals of ethyl-ether of gallic acid, by polarized light; several sections of hairs and vegetable stems; blood corpuscles from different animals; starch grains of different plants; a very fine preparation of jaw of foetal pig, stained; and a splendid selection of various charged with diatoms, including *Pleurasigma Angulatum* x 1000, and the beautiful *Heliopelta* x 250; and concluded with a very fine "arranged" slide of diatoms, wheels and plates of *chirodata* and anchors of *synapta*.

The PRESIDENT called the attention of the members to some new features in the Society's lantern and remarked: "We have a new dissolving apparatus by which the picture is cut off from the screen, and at the same moment one slide is transferred to the place of another, and the movement is concealed from the eye so that it has a dissolving effect somewhat similar to that derived from the use of two lanterns. The invention was described in the *British Journal of Photography*, of September 12, 1884; there an opaque sliding shade was advocated, but our improvement consists in the use of ground glass, which softens the light and avoids the disagreeable effect upon the eye which the other form made."

The meeting having been called to order after the recess, the President announced the reading, by Dr. Janeway, of a communication from Mr. Robertson, detailing the latter's experience with improperly packed dry plates during a recent trip to Florida.

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157 WEST 47TH STREET,
NEW YORK, May 12, 1885.

F. C. BEACH, Esq., *President N. Y. Amateur Photographic Society*.

DEAR SIR: As I am unable to be with you to-night, I desire to give the Society, in writing, the benefit of my experience in Florida with a brand of plates that have lately appeared in the market. I took with me two sizes—for detective camera and for 4-5 camera.

To begin with the outside packages. They are put up in a most unhandy, I may almost say clumsy manner. The plates are inclosed in an ordinary box, and this is pushed endwise into another; the opened end is closed, and the package is entirely covered with paper pasted on. No instructions are given, so you are entirely in the dark as to how the package should be opened. If the plates are thick, the cover of the inner box is raised, and the only way to get it out is to *tear* off the outer covering. If the plates are thin, they rattle about in the box, the slips separating the plates change position, and the result is seen in the rough prints I send you.

The manner of separating the plates is as faulty as it can well be. A strip of thin cardboard, a quarter of an inch wide and well hypo, is wound backward and forward at either end. These, if they remained in place, would ruin about three quarters of an inch of each plate, but they donot, as I stated above. Some of my negatives show four, some six dark bands — the places where the strips rested at different periods. How much good is there left in a 3¼ x 4¼ negative under those circumstances? The material of which the boxes is made is also charged with hypo. I found some of them very roughly cut on the edges, and fibers of the paper loose among the plates. You will observe on the print of the light-ship a white blot; this I believe to be caused by a small piece of the box which I brushed from one of the plates before putting it in the holder.

Before starting on my trip, I filled six double holders for the detective camera. It took two and a half boxes to furnish the dozen plates. The sides were cut true, with the exception of a lip, left at one end sufficiently large to prevent the plate from being pushed into place.

The other plates had a corresponding piece taken out of the corner. This appears to me to be caused by the diamond being placed an eighth of an inch from the edge before cutting, and trusting to luck that the glass will break in a straight line.

In one of the 4 x 5 boxes I found four plates, each one-eighth and one thirty-second of an inch thick--too thick to fit in the holders.

The emulsion on these plates is good, and very rapid, and the developed negative is bright and full of detail, with the quickest exposure, that is, where the hypo bands do not interfere.

I send you an Eastman plate, used two years ago, packed almost in the same way as these new plates. That method was abandoned as bad, and yet, with that experience before him, the maker of the new plates puts his on the market with all of the faults and none of the redeeming qualities of that method. You will observe that seven-eighths of an inch of the Eastman negative is worthless.

My photographic experience would have been a very sad one—no good negatives, but a lot of spoiled plates—if I had not taken a few Carbutt's Special. The varnished mat does not seem to prevent the action of hypo, as you can see by the plate I send you, but the dark line is about the rim, and not lying over the negative in three or four places.

In conclusion, I would advise every member of the Society, when fitting out for the summer vacation, to refuse to take any brand of plate packed in the manner I have described.

Plate makers have had sufficient experience by this time to avoid many of the dangers that were at first unknown, and if any of them persist in packing their plates in a way that has already been tried and condemned, let the amateurs, at least, refuse to purchase them.

GILBERT A. ROBERTSON.*

[The specimens passed around were examined with much interest, and the letter amused many members.]

Dr. JANEWAY showed a print from a plate which was exposed after having been kept in the holder a year, and developed with the Society's standard developer a year old. The print was made on "ready-sensitized" paper that had been kept over a year, and was toned in a tungstate of soda bath almost black with age. The result showed no mat markings, and was not perceptibly different from what would be expected from new plates and paper, showing that properly packed plates will keep indefinitely.

The PRESIDENT—In regard to this subject of marked plates, I will say that my experience has been similar to Mr. Robertson's. I had plates which I kept about six months and then undertook to develop them. In the meantime the separating pieces had become removed from the edge toward the middle of the plate, and upon development a wide diagonal streak ran across the face of the plate, injuring the picture. There was no particular pressure on the plate. In a recent issue of the *Amateur Photographer*, a writer states in a letter some interesting facts in regard to the dry-plate makers on the other side. He says they are most careful in their choice of packing and separating paper. He generally found an unsensitized place on the edge of the plate, and the picture sometimes quite fades away at that place, which he attributes to nothing more than the action of the thin cardboards by which they are separated. He winds up by saying, "Can any one explain this?"

Mr. CARBUTT—When I first commenced making gelatine plates in 1878, I began putting them up with tissue paper, and procured for the purpose a paper used by silversmiths, made in England, and then placed the plates, the first one face up and the balance face down. After learning the experience of some who had had trouble with these, I found that when one rested on the other there would be friction which was in a greater or less degree injurious. I then made use of a surface of hard paper that answered very well for awhile, but after a time I found that where the plates were left in a damp situation the dampness would penetrate the box and cause the plates to be marked. I then gave up that method and used strips across the end of the plate; very soon I learned that that too was marking the plates. From observation of other makers' plates I learned that some used separators made from paper that had been varnished, and thought that that would afford a sufficient protection, but I discovered that even this did not effectually prevent the marking. It is my intention to send this Society, in a short time, some plates packed in a manner I am now employing. I wish the boxes to be sealed and opened only at intervals.

They will have between them sheets of a black paper, similar to the needle paper, which I am importing, and the package will be wrapped in waxed paper to exclude moisture. He had tried to impress on dealers the necessity of storing the plates in a dry place, on edge, so as to avoid pressure.

Mr. PARTRIDGE said he was glad the subject was receiving attention. He had found that, besides the trouble arising from hypo or other stains in the packing, we must guard against the effect of pressure. A neutral substance coming between the plates, and exerting sufficient pressure, will produce markings under development. It seems to me that the perfect system will be one which will hold the plate by the edges, and allow the whole bundle to be wrapped in waxed paper.

Mr. PRAY said that plates should be kept dry; they would stand any kind of abuse except moisture and pressure. He had about a gross of Carbutt B plates put up in May, 1882, which were perfectly good to-day, and promised to bring some negatives made on them to show before the society.

Mr. JANEWAY—Mr. President, I would like to move that a vote of thanks be extended to Mr. W. H. Walmsley for his able and interesting paper, and for the beautiful slides which he has so kindly shown us this evening.

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*We understand that the faults spoken of by Mr. Robertson had been mentioned to the maker of the plates in question before the above communication was written, and he states that he has corrected them. It seems very unfortunate that after having coated a lot of plates with what those who have used them say is the most rapid and brilliant emulsion in the world, they should be spoiled by the carelessness of employees working in the dark, and therefore not liable to careful supervision. The manufacturer now keeps a record of those who cut and pack each emulsion, and will be pleased in every case of criticism to have the number of the emulsion specified.

The motion was carried.

Mr. WALMSLEY then passed around some photographs on 14x17 plates, made with a Beck 8x10 autograph lens, one of which, a life-size head, was a remarkable production for any lens, much more for one of this class and size.

The SECRETARY then showed a new lens made by Mr. George Wale, of this city, and called attention to the peculiarities of its construction. The diaphragms are kept in place by a spring, so they cannot drop out when the camera is carried from place to place. The diaphragm can be inserted either from above or below, the spring closing the diaphragm slit when the full opening is used. A crescent-shaped piece of brass is also provided, containing five diaphragm openings. This can be inserted through the mount, and the size of diaphragms rapidly changed.

The PRESIDENT showed a sample of a paper tray for traveling. The material was "leather paper" soaked in boiling paraffine; the corners were folded so as to make an edge, and pinched together by garter clamps. When not in use it can be packed flat. This was given him by Mr. George Bullock, of the Cincinnati Camera Club, whose method of carrying developer while traveling was alluded to. It consists in using a homeopathic medicine case, and putting in one set of vials the alkali in solution, and in a smaller set the pyro solution, one bottle of each being added to a given quantity of water to make a normal developer.

The meeting then adjourned.

What Our Friends Would Like to Know.

Q.—F. P. R. writes: Can a dry plate be soaked up and strengthened after it has been developed and dried, and found too weak?

A.—Yes. After fixing and washing well, try the formula given on page 231 of BULLETIN, April 25, under "Intensification."

Q.—E. J. T. writes: When I make a solution of Oxalate of Potash, I never can get enough Oxalic Acid into it to turn blue litmus paper red.

A.—Are you sure that your salt *is* Oxalate of Potash? Test it by first making it quite acid with muriatic acid, then adding ammonia until it smells strongly of the latter, and lastly add a solution of calcium chloride. This will give you plenty of a fine white precipitate; and if it does not the salt is not Oxalate of Potash. Also, it should not effervesce, or only to a very slight extent; many inferior grades effervesce considerably, and therefore take large quantities of oxalic acid. If you cannot get good Oxalate of Potash, you can make a solution of it in the following manner: Dissolve 27 parts of salts of tartar in 100 parts of water, and add finely powdered oxalic acid till the solution turns blue litmus paper red; stirring all the time. This will give a saturated solution of Oxalate of Potash which, after filtering, will answer all purposes. The operations above mentioned are too troublesome, if you can buy good oxalate; and most of the reliable dealers keep this salt. But in case of need, the method given will answer all purposes.

Q.—J. R. S. writes: "By what formula can I render cloth water proof without painting it, such as tent tops, etc.?

A.—Soak the cloth in weak glue water, and when dry, wash over with a strong solution of alum.

Views Caught with the Drop Shutter.

C. S. ROSHON opened a gallery in Middletown, Penn., on April 1. He was formerly located in Harrisburg.

WE regret to note that our friend, Mr. E. M. Collins, the photographer, of Oswego, has lost his oldest daughter, Miss Flora, who died of consumption at the early age of twenty-two, after a sickness of several months.

THE photographing of an audience at a theater has all the features which attend the sitting for a picture by an individual. The audience laughed, fidgeted, looked conscious, prim and unnatural, and was as nervous as it was the proper thing to be in that condition.—*Boston Journal.*

WE take pleasure in acknowledging the receipt of the constitution and by-laws of the Montclair Amateur Photo Club, organized April 9, 1885. Regular meetings are held the first and third Wednesdays of each month. The officers are: FRED BULL, President; LESTER CHURCHILL, Secretary; HUBERT WAR-

REN, Treasurer; JOHN G. UNDERHILL, Librarian.

THE difficulty experienced in taking a photographic portrait of a sneak thief on Monday suggests the thought that Mr. Muybridge's apparatus might be used with advantage on such fellows. His battery of cameras would take the thief from a dozen different points of view while wrestling with the officers, and the pictures might be much more lifelike and natural than if posed for the occasion.—*Philadelphia Ledger.*

ARTISTIC PHOTOGRAPHY.—One of the finest and most picturesque scenes yet produced by the camera is a flock of sheep grazing on the campus in Central Park. There is a pleasing variety in the attitudes of the animals, and although the number is large, each is a perfect portrait. The picture forms a study for the artist. The negative was made by Mr. Henry J. Newton, member of the New York Society of Amateur Photographers.—*Scientific American.*

AT a recent meeting of the Society of Amateur Photographers of New York Mr. Beach exhibited a new roller curtain shutter, recently patented by Mr. August Loeffler, of Tompkinsville, Staten Island.

It consists of a front board with a large aperture in the center, and a lens board clamped to the main board; at each end of the front or main board are two rollers supported between metal brackets, the upper one provided with an ingenious catch and ratchet for releasing the shutter. The lower one has a spiral spring, inside which can be tightened or loosened, thereby increasing or diminishing the speed. By means of a crank on the end of the upper roller, a curtain having in it a square aperture is wound on this roller. Pressure on a small trigger, which can also be pulled by a string, releases the curtain, and the exposure is made when the aperture passes across the front board and is wound up on the lower spring roller.

An 8 x 10 print was exhibited, made by using this shutter, which showed that the exposure must have been very rapid. The model shown was neatly made, and worked smoothly.

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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Vol. XVI. SATURDAY, JUNE 13, 1885. No. 11.

A METHOD FOR DETERMINING THE PROPER TIME OF EXPOSURE.

BY REYNOLD W. WILCOX, M. A., M. D.,
Member of the Society of Amateur Photographers of New York.

During July, 1884, in company with the late Henry T. Anthony, Esq., I was occupied in taking some out-door views. As the lens and the plates used were somewhat unfamiliar to both of us, the first few plates were badly timed. The question under discussion was the subject of many conversations between us, and the immediate practical advantage of a method, by which plates could be correctly timed, impressed itself strongly upon us, as it doubtless has upon the majority of photographers, and in particular upon amateurs. In one of these conversations I suggested that a modification of the principle involved in the use of Nobert's Bands of test lines for the determination of the resolving power of microscopic objectives, which I had some previous knowledge of, could be employed. Mr. Anthony at once took up the matter with the care and thoroughness so characteristic of him. My suggestion was, that there should be painted upon the ground glass of the camera a series of opaque horizontal markings about an inch long, the interspaces being equal to the width of the markings, the breadth of the lines to increase so that there would be a series of ten or more bands in the scale. Naturally these breadths would be determined by experiment. The method of working would be, that the focus having been obtained, the proper stops in position, the operator's head being wholly within the focusing cloth, it could be easily determined to what series these markings could be clearly distinguished, the only light upon the ground glass being that transmitted by the lens. If the view is well lighted, naturally finer markings could be clearly distinguished as separate lines, than if the light were dull. So for each brand of plates the proper time for exposure could once for all be determined.

We went over the ground theoretically and practically, and were surprised how readily differences of light, hardly appreciable to the eye looking over the landscape, were easily demonstrated by means of the scale upon the ground glass of the camera. At Mr. Anthony's suggestion, and indeed which involved a principle covered by a caveat filed by him many years previous, colored glass was to be employed, and the absolute measurement of light to be arrived at in another way. This was thoroughly worked over theoretically, and upon my return to the city I carried out, under Mr. Anthony's direction, a series of experiments to determine its feasibility. The primary object in view was the invention described in the title of this paper; the object carried to its logical termination involved a method of measuring light in general, actinic light in particular, in terms of itself.

All the previous methods of measuring light—Warnerke's sensitometer, unit lamps, magnesium light, electric lamps—I had before worked over and demonstrated, to my own satisfaction, that they gave incorrect results, and were equally useless for any scientific work. At the risk of being somewhat tedious, but that the method may be perfectly understood, I will give in detail the experiments as I carried them out in August. Glasses of various tints and colors were used, but at last a translucent glass of a grass green color was adopted. In all experiments I used a 5 x 8 Novel camera, the box being in the horizontal position, and a B Platyscope lens and instantaneous plates of the same emulsion. The strip of glass one inch by five inches was made to adhere in a vertical position to the ground glass of the camera by Canada balsam smeared over the whole of the strip. In addition, I procured diaphragms with openings varying in diameter from one millimeter to thirty millimeters, the last being a little larger in size than the largest opening in the set of diaphragms sold with the lens. The plates were exposed in sets of six, at the same time in the day, on the same landscape, and were developed in series of two, each series having a developer freshly made up. The developer employed was ferrous oxalate, the standard solutions of ferrous sulphate, potassic oxalate and potassic bromide being used, the proportions used, of iron and bromide, being those suitable for a correctly timed plate. The plates were all left in the tray the same length of time, and were fixed in the usual standard thiosulphate of soda solution. They were then carefully numbered and the results marked in my notebook.

The working of the theory was as follows:

The preliminaries duly accomplished, the diaphragms of various sizes were placed in the slit of the tube until one of such size was found that the detail of the foliage was just obscured when seen on the ground glass through the colored strip. A series of exposures were then made, all carefully timed with the watch, the obscuration of foliage detail being noted between each exposure, the diaphragm being changed if necessary. The times of exposure chosen were such that it was hoped that the plates exposed about the middle time would be correct. The plates were then developed and carefully examined. It was then found that one plate was correctly timed, one was over and one was under-exposed, but would have been fair negatives with proper development, while the others were beyond all manipulation. This determined the proper time of exposure under the above conditions, and likewise the amount of latitude in time that could be given.

This experiment was verified as follows: six plates were taken, and exposures made as above. One was exposed in the lower limit of time, one half-way to normal exposure, two the correct time, one half-way to upper limit, and the last at the upper limit. These plates being developed, two were correctly timed, two over and two under exposed. The time which gave correctly-timed exposures with the lens stopped down till detail was just obscured in the foliage is called the normal time. The theory of using the foliage as a guide is obviously that any plate that has been exposed properly for the foliage will certainly have had time enough for the other constituents of the landscape.

The next series of experiments was for further confirmation. The areas of all the diaphragm openings were computed—an easy problem, since we had already the diameters. Area = square of radius, multiplied by $\pi = 3.1416$; but as the absolute areas were not necessary, only the comparative areas, which vary as the square of the radii, the ratio of the areas of openings was easily found. Now, since the proper time of exposure varies inversely as the amount of light transmitted, or inversely as the square of the radii of the openings,* or inversely as the areas of the openings, it was easy to construct a table in which the relation of the amount of light transmitted by the stops could be readily seen, and by which the proper time of exposure, when another stop was used, could be determined, the normal time of the plates being known.

The necessity for such table being the fact that the stop which would just obscure the foliage as seen through the glass slip might be neither adapted to the focal length of the lens, nor suitable for the sharpness and depth of focus, nor yet allowable on the score of time. This series of experiments was to prove that the calculated time, the stops being changed, was the proper time of exposure.

This brings us to the practical application of the method. Supposing the normal time of exposure for a certain brand of plates, a particular lens being used, is represented by x; a diaphragm with an opening of three millimeters radius just obscures the foliage detail as seen through the ground glass slip, while a stop with a radius of six millimeters gives the right sharpness, depth of field; therefore the proper time for exposure equals $\frac{3^2}{6^2}x = \frac{9}{36}x = \frac{1}{4}x$. Hence, the plate exposed one-fourth of the normal time will have the proper amount of exposure. Small fractions can be disregarded, as the latitude of exposure allowed by most plates is sufficient. A mechanical device, to be described later, does away with all computation. The normal time for a certain brand of plates being determined, as it can be done by four plates, mistakes in timing exposures are not likely to occur. This method can be used for testing rapidity of plates, and has the advantage over other methods, in that all the tests are made with reference to sunlight, which is really the only light which interests the average photographer.

I have put this method to many and varied tests, and, with the exception noted above in the foot note, have found it accurate. Still it has its limitations, as, for instance, when the light in interiors is very dim, so much so that focusing must be done by the mediate method, obviously this method of determining exposure will fail. Then, indeed, the time of exposure even with an expert is by no means easily determined. I refer now to exposures which necessitate over ten or fifteen minutes time. But in reasonably well lighted interiors, the same plans as for landscapes can be adopted, substituting for the foliage some dark object which does not reflect much light. In this way I have correctly timed some interior exposures, when the calculated time was far from the time estimated by an expert, the result demonstrating the correctness of this method

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* This is mathematically true where the difference of the openings of the stops compared is not extreme; but when they approach either limit in size, this must receive some correction; how much, could be easily determined by experiment.

A few days before the death of Mr. Anthony we went over together the results of the experiments, and felt but one step more was necessary to render the method complete; that is, something was required to obviate all computation, and do away with the number of diaphragms employed (about fifteen to twenty being required instead of the six usually used with the lens). It was thought at that time that by widening the slit in the tube an apparatus constructed as follows could be inserted: For the diaphragm, thin four-sided overlapping slips of blackened metal, lying between two thin metal plates, these slips being pivoted at one corner and connected with each other. By rotation of a screw with milled head to be placed outside of the tube, they could be made to approach their free borders, which should have concave curves, so that the aperture would be practically a circle. This is substantially the mechanism of the Brown Iris diaphragm employed in microscopes. The projecting screw should open or shut completely the aperture by a revolution through one circumference (360°). On the stem of this screen a small pin should project as a pointer. Below the pointer should be placed a graduated collar, say of 400 divisions, loose enough to move easily about the screw stem, and resting upon the flange, which should fit closely to the sides of the slit in the tube. The normal time for the plates having been previously determined, focus approximately and turn the milled head of the screw until the aperture of the diaphragm is just sufficient to obscure the details of the foliage, if a landscape. Next turn the graduated collar until the number representing the normal time of exposure is directly under the pointer; now, by turning the milled head again, the aperture of the diaphragm is made correct for the lens, sharpness, etc.; refocusing the lens, if necessary. The number now under the pointer will give the correct time for the exposure. The mechanical details remain to be experimented upon. I believe them to present no especial difficulty.

The infrequent intervals of leisure afforded by an exacting profession have not permitted me to work out what seems to be the end of these experiments. The theory has been put into practice and has been proved to be feasible. The mechanical device is merely reducing matters to a simpler equation, and is no modification of the theory.

It seems fair to conclude that this method is a simple one for the purpose named, for determining the proper time of exposure, and that it may serve other uses, as in the testing of plates, appears not improbable.

1050 Lexington avenue,
May 16, 1885.

THE AMATEUR EXHIBIT AT NEW ORLEANS.

[*By our Special N. O. Correspondent.*]

We shall now conclude with a short description of the Amateur Exhibit, which, although it arrived late and was not ready when these notes were begun, has now the place of honor, and is well worthy of it. The most important display is from "The Society of Amateur Photographers of New York," whose center piece is a heavy gold and bronze frame, richly ornamented, with four companion frames in gold and velvet, giving the whole effect an air of taste and elegance.

But little prominence is given to any individual names, the work being shown mostly in the name of societies, which democratic idea I shall respect in my description.

The cities and States represented by these societies are: New York City and Rochester, N. Y.; Cleveland, Ohio; Lowell, Mass.; Chicago, Ill.; Philadelphia, Pa., and Bridgeport, Conn. So many societies, presenting the work of a greater number of individuals, must necessarily present a great diversity of effects and a wide range of artistic ability. But if their artistic thermometer begins to indicate from near zero, it reaches also to the high degrees, equaling, if it does not surpass, in some respects, the work of the professionals in the same line. Perhaps the first point in the amateur exhibit, taken together, to a critical eye, is the great diversity of tone observable, it being so great as to make a variegated or particolored effect, so different from the professional section, which maintains a great uniformity of tone, the standard aimed at being, apparently, a warm purple black, while the amateur work ranges from a warm sepia or chocolate to a cold blue black. If this diversity comes from the various tastes of a number of independent workers, each doing what he believes to be best, it is encouraging; for one of the hampering influences around professional photography is the tendency to be governed by the prevailing fashion, instead of intelligent variation, according to the peculiarities of the subject. It is this blind adherence to the prevailing fashion—of tone, for instance—in photography that places before us the picture of a tropical landscape, glowing with color and hot with sunshine, but toned a cold steel blue, until every indication of warmth and coloring is lost; or a winter scene toned a warm brown, so cheerful that the wintry sentiment is destroyed. Sometimes, however, it would seem that the variety of tone was only from inexperience, failing to attain the uniformity it sought for.

There is another prevailing characteristic of the amateur exhibits, which must pleasantly impress the artistic observer; that is, the evident choice and portrayal of pure beauty for its own sake, rather than scenes of utility for commercial value. The contrast between the professional and amateur exhibits in this respect is remarkable. One professional photographer, whose work is technically excellent, exhibits several views in city streets intensely offensive artistically, from the prominence of that modern eye-sore and disagrace to all large cities, the telegraph poles and wires—scenes as totally robbed of artistic interest as the washerwomen's back yards with drying lines.

Also another professional photographer exhibits some well-taken views of national cemeteries, which, although they have patriotic and commercial value, are as much devoid of beauty as a checker-board.

The amateurs, being free from the incentive of money-making, seem to have such instinctive reverence for the beautiful that they avoid such subjects, or at least do not exhibit them. Amateurs are usually gentlemen of wealth and leisure, with education and refinement, and have naturally artistic tendencies, which they seek to develop and gratify by photographic picture-making.

They bring to the work a genuine love of nature and all natural beauty, with taste to discriminate and leisure to admire. Photography is to them a distraction from professional cares or business duties, and the expense of such innocent recreation is repaid tenfold by the improvement in mental tone with which they return to their various fields of activity.

They bring to their photographic labors fresh and unsophisticated tastes that have not been dulled and warped by contact with a public more exacting than intelligent, and most arbitrarily critical where least capable of judging, until striving to please them becomes a thankless labor, whose only incentive is the money to be made, which, of late years, is too little to stimulate any great animation.

What wonder, then, that the professional photographer, unless gifted with a very elastic temperament, finds his avocation a dull routine of thankless and depressing duties, from which he gladly escapes as much and as often as he can to other sources of recreation and amusement, thus leaving to the amateur a clear field in the pursuit of the beautiful, for its own sake.

And this divergence of motive will grow wider and wider as the years go on. The professional photographer will give thought only to what pays, and to everything that does pay, whether of the highest or the lowest order, morally and artistically. His only standard will be the public taste as indicated by the public demand.

But the photographer is no more to blame for following the fashions than the tailor or the milliner. He is governed by precisely the same laws and motives, and, like them, the more complete his obedience, the greater his financial success. Thus, in future exhibitions where amateurs take part, the greatest interest in professional exhibits will be comparing the degree of perfection to which each has arrived in following the photographic fashions, while in the amateur exhibit will be found whatever there may be of fresh and unconventional taste and originality of treatment.

With amateurs will begin new ideas, which, catching the public eye and pleasing the public taste, (which is always eager for novelty, although always governed by fashion,) will be adopted by the professionals and become fashions for a season in their turn.

There are half a dozen 11x14 photographic views with figures now hanging on the walls in cheap frames, without margin and without name, that do more to show pictorial and artistic possibilities than all the others in the Exhibition. They have been added since the Exposition was half over; they hang in an obscure part and attract but little notice, yet if properly framed and hung to show all their beauty, they would make an exhibition by themselves. Although they have no name, I recognize them as the work of H. P. Robinson, of England, by one of them being the original of an ink print that appeared in the *Photographic News*, last year, under the title, "He never told his love."

I do not know that Mr. Robinson can be strictly classed with amateurs, for I believe he sells his productions, but neither is he a regular professional; anyhow, his work is a wonderful revelation of the pictorial possibilities of photography in artistic hands.

These pictures are all out-door, mostly in bright sunshine, and taken with the shadows falling obliquely toward the front, and yet everywhere full of soft and delicate detail, from the cloud masses in the sky to the deepest cast shadows on the ground, and that without flatness or weakness anywhere; all is round, deep and clear.

The accompanying landscapes are as fully and faithfully delineated as if taken without the figures, while each and all the figures contribute their quota of pictorial effect, with as much grace and ease as if drawn by an artist's pencil, and the faces have more modulation and expression, all helping to tell the several stories.

And it is in this direction we are to hope more from the enthusiastic devotion of amateurs than from the conventional efforts of professionals.

Artistically speaking, one such picture as these is worth more than a whole roomfull of ordinary commercial work whose chief merit consists in being clean and perfect up to the prevailing standard.

The Exposition is drawing to a close. An effort will be made to continue another year, with what success remains to be seen; but, truly, it would seem a misfortune to have so much of power and beauty, gathered at so great a cost, and then be scattered with the opportunity of doing no more good than this has had, from the comparatively few who have seen its wonders. Let us hope it may continue and have a milder winter, following a more prosperous season, and that hundreds of thousands will come to learn its great lessons, in the grandest school-house ever erected—the Government and States Exhibit.

And, if any more money is needed, furnish it and charge it to the Education Fund for Adults, and call it money well spent, if it stimulates intelligent pride in our common country, awakens emulation in the South for that social and material progress which so grandly develops the North and West, and communicates to every section a sincere respect for honest labor and true justice toward faithful laborers, as the broad foundation on which must rest our nation's future greatness and welfare.

May, 1885.

THE PHOTOGRAPHIC BULLETIN is my daily reading, since whenever I see it I learn something good. Yours truly,

J. P. YBANEZ.

I THINK your journal the best I ever saw; it treats with great clearness all subjects.

E. C. WINANS.

[*From Photographic News.*]

A FEW OPTICAL HINTS IN CONNECTION WITH COPYING AND REPRODUCING NEGATIVES.

IN connection with the copying of photographs, the production of transparencies by the aid of the camera from negatives, and the reproduction of negatives by the same means, there are one or two purely optical points which should at all times be borne in mind by the operator, although but too often they are neglected, with the consequence that results are produced much inferior to such as could be got with no greater trouble, were a few simple matters only attended to.

It is a very general impression among photographers that, when a picture is copied by the camera, there are the same objections to the use of a wide angle lens that there are in the case of taking an actual negative from the objects represented in the picture. That, for example, if the picture represent a building, and is to be copied with a short focus lens, a wide angle being included, this copying will show the strained perspective which would result were the wide angle included in photographing the building itself. This is a complete mistake. However wide an angle is included, no alteration of perspective will take place unless the lens be not a rectilinear one. The *only* drawback to the use of a wide angle—if the lens has covering power—is that there is a falling off in illumination, and that greater care is necessary to insure that the plane of the sensitive film be parallel with the plane of the picture to be reproduced. Be it not supposed that we are advocating the use of a wide angle lens in copying. We are merely pointing out that the objections to its use are not those popularly—or at least often—attributed to it.

But though the falling off in light is certainly objectionable in the case of copying a picture—a painting or drawing, we should perhaps rather say—it may be the very reverse in the case of reproducing a negative of any size, either smaller or larger than the original. In such a case, we have, in the ordinary manner of working, two courses open to us. We may take a transparency from the original negative by contact, and produce a negative from this in the camera ; or we may take a transparency in the camera and make a negative from this by contact. Now, it is well worthy of being noted that, whereas, by pursuing the first-mentioned course, the falling off of exposure which a negative always shows to a greater or less extent toward the edges *will be intensified*, by the second it will be reduced, or, indeed, may be altogether counteracted. In fact, it is only a question of selecting a lens of a certain focal length, and the falling off of this lens will, in producing the transparency, precisely counter-balance the falling off which the lens gave in producing the original negative. This is a point worthy of far more attention than has, so far as we know, been directed to it.

Again, the two commonest forms of distortion which are to be seen in photographs may be cured in copying either from a negative or from a print —we refer to want of parallelism in lines vertical in the original, and the bending of straight lines, the latter a defect commonly known as barrel-shaped distortion.

In the first case, that of want of parallelism in the vertical lines, we have merely to incline the negative or print to be copied to or from the camera, instead of keeping it parallel with the ground glass, to cure the defect. Thus, if, as is most common, the lines converge toward the top, we lean the picture to be copied toward the lens, so as to bring the top nearer to it than the bottom, when we can readily get the lines parallel on the ground glass. In the rarer case of divergence of vertical lines toward the top, we have to lean the picture away from the lens. Of course, in making this correction, we are necessitated to use a smaller stop than we otherwise might.

The curvilinear distortion is still more easily corrected than the other. It is, as all know, produced by the use of a single lens having a diaphragm at some distance in front of it. Most photographers are aware that if the single lens be reversed—if, that is to say, the lens be turned next the building to be photographed, the diaphragm toward the ground glass — the nature of the distortion will be altered. The lines will be curved inward instead of outward. Now, in copying, we may take advantage of this inward curvature to precisely counteract any outward curvature which may exhibit itself in the original negative. It is well to have a lens with a diaphragm the distance of which may be altered. After focusing, an adjustment is then made between the lens and the diaphragm till the lines on the ground glass are shown to be straight by the application of a straight edge to them. Increase of the distance between the lens and the diaphragm increases the distortion when the lens is used in the ordinary way ; when it is used reversed, it increases inward distortion, or, in the case of copying a picture showing outward distortion, increases the correction of this.

The only distortion that we know of no means of remedying, or even ameliorating, is that which is, in reality, no distortion at all, but is merely the strained perspective resulting from including too wide an angle of view.

The various points which we have touched on are, as of course we know, not discussed for the first time by many, but we fear they will have to be many more times referred to before all photographers will act upon them.

OUR PICTURE GALLERY.

J. Pastrana Ybanez contributes a number of excellent proofs of his portrait work. We are very glad to receive these evidences of his skill and good taste, and hope he will remember us again. In the way of kindly criticism, we think his own picture would appear to better advantage on a lighter background. The pictures of the other gentlemen sent are very good, and we can find no fault with them. The little child in the carriage is excellent for so young a subject.

The Notman Photo Company sent three pictures of cats that are very fine; but any praise from us is entirely out of place applied to the well-known beautiful productions of this firm.

F. O. Hills sends us a very interesting historic picture in a stereoscopic view of the birthplace of John Brown, at Torrington, Conn. The work is sharp and clean, and a very interesting addition to our gallery.

Two pictures of kittens (photographers are uncommonly interested in the feline order lately) from C. A. Blackman are charming, well executed, and very artistic. Some of our lady friends say "they are just too cunning."

H. J. Deal donates some fine views taken on board U. S. man-of-war Tennessee, at New Orleans. These are excellent work. The number of figures is quite large and the lighting evidently very irregular, owing to the shadows from so many objects on deck. The smaller group is the best, as the number of figures is less, and consequently more easily posed. The same donor also sends a view of Mackinac Island, which is as fine as anything we have seen for some time.

Some of the finest pieces of portrait work we have recently received are from B. L. H. Dabbs. It would appear that this artist is at home with all subjects of both sexes. The little baby that just begins to notice its surroundings; the boy with a face beaming with mischief; the little Miss from school; the more mature maiden; the matronly dame, and the elderly man are all equally good. We do not remember to have seen so many good pictures before, from the same hand, and with so varied a selection of subjects.

Our good friend Perkins again delights us with some specimens of his landscape work. We had occasion to call attention to some of his charming work in a previous issue; the set of pictures illustrating a story, with his little daughter posing. The landscapes now sent are admired by everybody, and we are unable to give in words an idea of their exquisite beauty. We most heartily congratulate Mr. Perkins on his success.

EXHIBITIONS.

Art has two distinct and readily recognized phases. One gives us products that represent ideas; this is fine art, and is a gratification of the æsthetic sense. The other phase of art gives us products that answer mechanical purposes and are made for practical uses, and we apply to it the term mechanic art.

This distinction is very seldom so sharply defined in any product of either phase of art that we can say: that is purely fine art work, and this is purely mechanic art. A painter that is without mechanical skill of some kind is a failure, no matter how good a colorist he is, while a mechanic without some artistic taste gives us his handiwork in a form that is repulsive to our æsthetic sense.

There is perhaps no product of human thought, genius and dexterity where these two phases of art are so necessarily and intimately mingled as in photography. The genius that makes the light wave its servant, the taste and thought that bring these services into a harmony in the products obtained, and the mechanical skill that gives the finish that places these harmonies in the best possible conditions for their development, are combinations of mechanic and fine art of the most intimate character.

The proper blending of the mechanical and æsthetic phases of the photographic art deserves our every encouragement, and the means of giving this encouragement is best obtained by competition. The bringing together of the kindred products of a great number of individuals in an exhibition is undoubtedly the means of raising the standard of excellence of photographic work, stimulating the less ambitious members of the fraternity and honoring the leaders by well-earned praise.

In ancient times the Greeks had certain festivals where contests were held exhibiting skill in the use of arms and feats of strength. This was in a time when every man of worth was a soldier, and considered it his duty to attain perfection in the use of arms to protect his country. At these contests of strength all Greece sent her heroes to compete, and proud was he who received his olive crown. We fear so simple a trophy would not be as highly valued at the present day.

But these were contests in which the brutal instincts of man were stimulated. To-day is a time of peace, and it has also become a time of competition in skilled labor and the fine arts. Music, sculpture, painting have received such an impulse since man thought less of war that our homes, our cities, our every-day objects of utility are speaking evidences of the development of the beautiful in the mind of man. And what a world of good our own art of photography has done in bringing these works of art within the reach of the multitude. Any stimulus to the cultivation of this art means a stimulus to the general dissemination of ideas of the beautiful, and a consequent elevation of æsthetic tastes.

We have recently received quite a number of notices of photographic exhibitions in various places, that should call forth such a development of the photographic genius as the world has never seen before. In Oporto we have an exhibition to be under the presidency of the King of Portugal; in England we are to have various exhibitions, in part or wholly photographic; while nearer home, at Philadelphia; we note the well-arranged programme of the Photographic Society of Philadelphia. We also understand that the New York Society of Amateurs have an exhibition in contemplation.

But the exhibition of more immediate importance at the present moment is that in connection with the Photographers' Association of America, at Buffalo, from July 14 to 18. From all we can hear this promises to be a most delightful affair, and a great many competitors will take part that have never before exhibited in such a manner any of their work. Let all who have an interest in this convention send something to show their personal interest in the development of our beautiful art. Every one that contributes his share to the coming exhibition will never regret the part he took in the convention at Buffalo. And if he can take a personal share in the proceedings, he will be sure to carry home with him some new ideas and a broader and more generous feeling toward his fellow workers in the art. The development of art and industry is an indication of the advancement of mankind, and photography is sure to add her power to this end. Hence the importance of sometimes thinking that you are one among the mass of men who must sacrifice a little of your personal interest for the present general good, to be returned to you with interest in the future. The exhibitions can only be a success when each one who takes part in them does so with the understanding that he is exhibiting his work for the general advancement of the art as well as for his own gratification, and in the spirit of emulation that leads to a higher degree of perfection in all things artistic.

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PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

SIXTH ANNUAL CONVENTION, JULY 14 TO 18, MUSIC HALL, BUFFALO, N. Y.

To the Photographers' Association of America :

THE time is near at hand for our sixth annual convention, and I hope every photographer who has an interest in our beautiful art is preparing an exhibit for Buffalo. Our local secretary, Mr. MCMICHAELS, has been indefatigable in his efforts to make the convention a success. We may expect a wonderful display of fine photographs. The most celebrated photographers of this country have promised to exhibit.

Mr. GENNERT is now in Europe, and intends to secure some fine work from there for exhibition. Interesting papers of practical value will be read by Messrs. J. TRAILL TAYLOR, E. L. WILSON, J. F. RYDER, and many others eminent in the profession, including prominent photographers from England, and a novel lecture by Mr. LAFAYETTE W. SEAVEY on lighting and posing.

Our programme for proceedings of each day, railway and hotel rates, etc., will be published in detail July 1. Every member of this Association has a part to perform. The success of the convention is not wholly dependent upon the Executive Committee; but each one should do his duty by making an exhibit, and taking an active part in the proceedings.

Fraternally,
J. LANDY.

Editors of BULLETIN :

THE following will be the price charged by the hotels during the coming convention :

Gennesee House,.....	per	day,	$3.00@	$5.00.
Tift House..........	"	"	3.00@	3 50.
Mansion............	"	"	2.50@	3.00.
United States........	"	"	2.00	——
Stafford House.......	"	"	2.00	——
Benslee House.......	"	"	2.00	——

Fraternally,
H. MCMICHAEL,
Secy.

CLEVELAND, O., May 22, 1885.

DEAR BULLETIN—I was in Buffalo a couple of days ago, and was much gratified at the careful and complete preparations of Secretary McMichael for the coming convention.

In two months from to-day (my opinion is), a thousand or more photographers will be saying : "The Buffalo Convention just closed was the best ever held."

The great floor of the State Arsenal, where our Exhibition is to be held, measures 52,000 square feet. For the purpose of the Exhibition this great space is divided off in blocks, with avenues and walks running at right angles. Through the main central part will be found the manufacturers and merchants, with a fine display of goods, and their business offices.

On the right, running the entire length, a space thirty feet wide and two hundred and sixty feet long, in the best light, is the photographers' exhibition place.

On the left will be found the army of back-ground and accessory exhibitors.

No pillar or column to break or obstruct this immense space. Already most of the space is taken, which insures the success of a grand exhibition.

The Assembly Hall, just back and one flight up, is spacious, and well provided with the necessary requirements of a great meeting of photographers.

There are to be valuable educational offerings made, which will be interesting and instructive to all.

Yours truly,
J. F. RYDER.

PRIZES.

WE are very glad to note the generous step taken by our publishers in offering prizes for photographic work at the coming convention. This will be a very interesting feature of the meeting and will add considerably to the general success of this already well-planned exhibition. We heartly invite all to enter into this competition, and feel assured that it will prove one of the most instructive features of the display. Our publishers offer the following prizes, which will be exhibited at Buffalo:

One No. 17 B Climax Portrait Camera, double swing, telescopic bed and Benster holder, 20 x 24, value $97 ; for the best collection of large photographs (portrait work), not smaller than 14x17, made on the Stanley Dry Plate, and printed on the N. P. A. Albumen paper.

One 5 x 8 Fairy Camera, with six holders, Fairy Tripod and carrying case, value $60 ; for the best collection of cabinet photographs, made on the Stanley Dry Plate, and printed on the N. P. A. Albumen paper, negatives, if desired, to be loaned to us for illustrating ANTHONY'S PHOTOGRAPHIC BULLETIN.

Exhibits may be shown framed or unframed.

Each exhibit must have a card attached, stating "Negatives made on Stanley Plate and printed on N. P. A. Albumen paper," and giving name of exhibitor.

The prizes will be awarded on the second day of the Convention by a committee of three disinterested photographers, and delivered as soon as the Convention closes.

All competitors for the above will please notify us of their intention to compete at least ten days before the Convention meets.

E. & H. T. ANTHONY & Co.

OUR ILLUSTRATION.

WE give in this issue an illustration of the capabilities of the Gelatino-Bromide Rapid Printing Paper. When we remember that for this number of the BULLETIN over two thousand of these prints were required, it is most remarkable to see how few were rejected; and this too with a paper that has only been introduced at a comparatively recent date. We think this will prove a very interesting picture to many of our readers. The glossy surface is natural to the paper, and not produced by burnishing. A number of the prints were made by one who had no previous experience in printing; and they were all made by gas light with about one second exposure.

THE ACTION OF LIGHT ON SILVER CHLORIDE.

To the Editors of the Bulletin :

I HAVE read with great interest the paper of Prof. Spencer B. Newbury on the action of light on silver chloride, which shows, by new and strong proofs, that the prolonged insolation determines not the transformation of the silver chloride into subchloride, but the dissociation of the elements.

However, I do not agree with the learned professor when he states that "the action of ammonia on the blackened compound—supposing the reaction to be $3\,Ag_2Cl + 4\,NH_3 = 3\,Ag_2 + 3\,NH_4Cl + N$—throws no light on the constitution of that substance, since there is no objection to writing the action $Ag_2Cl = AgCl + Ag$ in the hypothesis that a subchloride had been formed."

To my knowledge there is no chemical action that may lead one to suppose that ammonia precipitates only one atom of silver from the hypothetical subchloride, leaving the other united to the metalloid, for ammonia would then behave with that salt exactly as if it were a mixture of silver and silver chloride, $Ag + AgCl$, which would be very abnormal indeed, and entirely opposed to the theory admitted by chemists and photographers—Roscoe, Fremy, Hardwich, Vogel—who state that the subchloride is characterized by the property of being insoluble in nitric acid and precipitated by fixing agents into metal and chlorine. But as chlorine instantly unites with ammonia, $Cl_3 + 4\,NH_3 = 3\,NH_4Cl + N$, it remains to find chlorine in the solvent to ascertain whether really a subchloride results from the luminous action.

In the papers on the action of light in photography, which were published in the BULLETIN, I showed that the silver chloride—or bromide—blackened by long exposure, was partly soluble in nitric acid, and that the insoluble part consisted of metallic silver and unaltered silver chloride, no chlorine being present in the solvent. This analysis was confirmatory to those demonstrating that the chlorine set free during the insolation was equivalent to that which should have been united to the metal found in the blackened compound. In repeating the experiments of Scheele, which were confirmed by chemists long before the invention of photography, my object was to show, by arguments sustained by facts, that light acting on sensitive photographic films first determines a motion of the elements forming the molecules of the silver salt, which ultimately results in the entire dissociation of the elements, no intermediate salt being formed, and that consequently the development of the latent image by the alkaline reagent depends *only* on this primary motion, which momentarily attenuates or nullifies the molecular attraction and thus permits affinities, which otherwise would be inactive, to come into play, and effect the reduction of the silver salt.

P. C. DUCHOCHOIS.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

THIS Society proposes to hold, during the fall or winter of 1885–86, an exhibition of photographs.

Amateur and professional photographers are invited to send specimens of their best work for competition in accordance with the rules and classification (see a later page).

A diploma will be awarded, by a Board of Judges, for the best picture in each class. Every precaution will be taken that the conditions of classification are complied with.

The place of holding the exhibition,

and the date, will be announced. It is proposed that it shall remain open to the public about one week.

The attention of contributors is particularly called to rules Nos. 4, 5, 6 and 7.

To facilitate the hanging of pictures by classes, it is requested that, as far as possible, pictures of different classes be not included in one frame.

Intending exhibitors are requested to advise the Secretary as early as possible, so that entry blanks, labels, etc., may be sent them in good time. Early notice in regard to transparencies and lantern slides is particularly desired, in order that proper arrangements for showing them may be made.

For all further information, entry blanks, labels, etc., address the Secretary, Mr. Robert S. Redfield, 1601 Callowhill street, Philadelphia, Pa.

John G. Bullock,
Frederic Graff,
S. Fisher Corlies,
Charles R. Pancoast,
Robert S. Redfield,
Exhibition Committee.

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A NEW DEVELOPER.

Editors of Bulletin :

In your Bulletin I notice an account of a Chicago operater who took the picture of a thief stealing a purse from a lady who was being posed.

I was astonished to find that "careful inquiry revealed the fact that it was true."

Now I would like to have some one rise up and explain :

1st. You say there was some sensitive gelatine film on the inside of the focusing cloth. When the operator put the cloth over his head, would not the white light have spoiled the emulsion ?

2d. It seems strange that the operator's nose should have been just where the ground glass should have been ; but, perhaps, down in Chicago, the operators are near-sighted, and put their noses on the ground glass when focusing. Yes, now I am sure of it ; for if he did not, his nose would not have been flat enough to get a picture on it.

3d. Is it so common an occurrence that an operator, "in a few moments later," would be developing another plate ?

4th. The newspapers say the lady screamed. Did the operator look to see what was the matter ? If so, what was the effect of white light on the emulsion on his nose ? If he did not, how did he retire to the dark room without exposing his nose to white light ? As soon as the lady screamed, did he run to the dark room (that would be just like a Chicago man), or did he dance around the room, holding the focusing cloth on his nose, when he did not know that there was a picture on it ?

5th. Do Chicago operators have a glass in the dark room ? I presume they do once in a while, *but it always vanishes when the door is open.*

Much has been said about expert testimony being unreliable, and I think it is so in this case ; but there is no telling what a Chicago man won't do. Your skeptical friend,

Ray A. Clarke.

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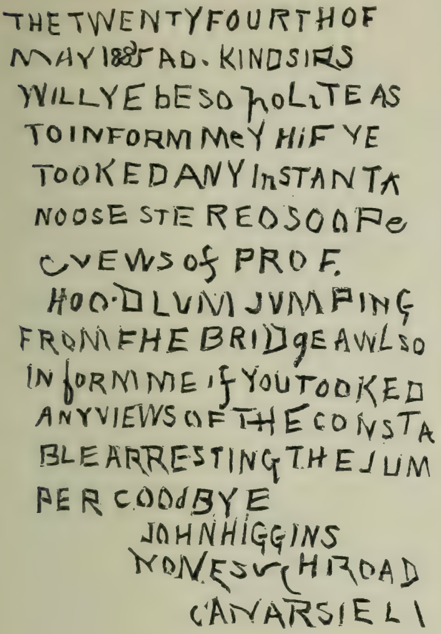
TICKETS FOR BUFFALO.

On the last page of this number of the Bulletin will he found the particulars about obtaining cheap tickets to Buffalo and Niagara Falls. The rates are very reasonable, indeed, and should induce many photographers to make the trip.

A CONUNDRUM.



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PERCOOdBYE
JOHNHIGGINS
NONESUCHROAD
CANARSIEL I

If any of our friends can answer the above postal they are at liberty to do so.—*Eds. of* BULLETIN.

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VIEWS ABROAD.

M. LEON VIDAL, in *Le Moniteur de la Photographie*, in a notice of a lecture by M. de Villecholle, tells how an audience of 2,000 persons at Versailles witnessed the development of a photographic picture. This was very successfully accomplished by using a glass dish and projecting so that the entire audience were able to follow all the curious phases.

In a paper in the *Bulletin de l'Association belge de Photographie*, Baron D'OTREPPE DE BOUVETTE recommends the use of sulphite of potassium in the oxalate developer. For this purpose he employs a saturated solution of the sulphite in water and slightly acid. Sulphite of soda is not adapted to this use. For use he takes 5 cubic centimeters to 100 of the ferrous oxalate developer. It is better to commence the development without the sulphite, and if the exposure is too short make the addition as above, and the details come out immediately and the whole plate gains in intensity. Bisulphite of potassium may be used, but the sulphite is preferable. When sulphurous acid is used it acts as a restrainer, and the image is more feeble than with iron alone. Four plates may be developed in the same bath with success. The advantages given for this method are: 1. The introduction of a sulphite into the iron developer augments its reducing power and diminishes the exposure. 2. As long as there is sulphite present in the developer, the latter is maintained at its maximum energy. 3. It eliminates entirely the deposit of basic salts on the surface of the plate. 4. The same bath is capable of being used for developing a number of plates, without sensibly losing its reducing power.

[The reason sulphite of soda cannot be used is because it would give oxalate of soda in the iron developer, and this alkaline oxalate, being much less soluble than the potash salt, might cause a white deposit.—*Eds. of* BULLETIN.]

A LADY, accompanied by three children, went the other day to a suburban photographer. While the latter was talking to her in the reception room, the printer came in and said in a low voice: "I wish you'd come and look at these prints on the new paper. The measles, if possible, are worse than with the sample we tried the other day." There was nothing in the remark, but the lady, overhearing it, took alarm at once. "Have you measles in your establishment, Mr. ———? Really, you ought to have told me. I must take my children away at once, for they have not had them." In vain the photographer tried to explain what a "measly print" meant; he only made matters worse, for the lady triumphantly pointed out that measles might be communicated by contaminated paper, and, gathering up her skirts and her children under her wing, she precipitately fled.—*Photo News.*

WE had occasion to call the other day on a photographer who was complaining bitterly of the badness of the times and the absence of sitters. A glance at his studio and reception room seemed to some extent to furnish the reason. Anything more depressing and uncomfortable cannot be imagined. The reception room was but half furnished; it was littered in every direction, and everything was thick with dust. The studio, a very well-appointed one, structurally considered, was in confusion, and dirt reigned supreme. Ladies —who now-a-days amount to two-thirds of an average photographer's sitters—like neatness, and let the photographs be ever so good, will not patronize a dirty and slovenly-kept establishment. It is a pity that some photographers are so short-sighted in this respect.—*Photo News.*

AMONG the objects of interest in the historical collection which the Photographic Society exhibits at South Kensington are the original Nièpce photographs which were recently in the possession of the late Dr. Bauer. They are thus described by him in the first edition (1844) of "Hunt's Researches on Light:"

1. A design 5½ by 4 inches longways, on a pewter plate 6½ by 5½ inches; it is stated to have been taken from a print about 2½ feet long. The picture represents the ruins of an abbey; in a proper light it is very distinct. 2. A view 7½ inches by 6 inches longways, on a pewter plate 8 by 6½ inches; it is stated on the back to have been M. Nièpce's first successful experiment of fixing permanently the image from nature. The view is of a court-yard seen from an upper window. It is less distinct than the former; the outlines of the black portions are bordered by a white fringe, whiter than the adjacent parts.—*Photographic News.*

WE are glad to quote the following from a letter of Mr. W. B. Tyler, Corresponding Secretary of the Pacific Coast Amateur Photographic Association, in the *Amateur Photographer.* He says:

"Our amateur rules are more strict than in England. With us the sale of a print or negative disbars a person from the rank of "Amateur." This being so, it is almost needless to say that our relations with professionals are of the most cordial character."

IN the *Photographische Notizen,* a new substitute for yellow glass for use with Orthochromatic Plates is recommended by PROF. VOGEL. The new material is called Aurantia and belongs to the series of aniline dyes. The color dissolves in 100 parts of alcohol, and also in collodion, to which it gives a deep yellow color. The colored film is made by dissolving 0.4 gramme of the dye in 100 cubic centimeters of 1¾ per cent. raw collodion; varnishing is unnecessary. Messrs. SCOLIK and V. AUGERER strongly recommend this material, and OBERNETTER uses it for making properly inverted negatives. He covers the cleaned back of an azaline-plate negative with the yellow collodion, puts it in a reversed position in the frame, making allowance for the thickness of the negative glass, and in this way makes an inverted negative. The yellow tint of the collodion may be varied; 0.3 gramme in 100 cubic centimeters of collodion gives a deep colored film, while 0.22 gramme gives a light one.

CAMERA MYSTERIES.

Photography Begotten by Optics and Chemistry.

The last two or three years have witnessed a "great revival" in photography. Modifications have been introduced which have rendered this truly fascinating art-science both clearer, easier and more certain, while they have further rendered possible the securing of effects previously undreamt of. The result has been that thousands of amateurs, of both sexes, have become practical photographers, a fresh interest in the subject has been awakened in the general public, while to many branches of science and of art aid has been afforded.

Photography is the child of optics and chemistry. As these parent sciences only attained their full development within the present century, it is not surprising that the photographic art was unknown to our forefathers. And yet there were some facts known even to the ancients which, if they had been followed up, would have led to the early discovery of the wondrous powers of the sunbeams. A glass lens has been found among the relics of Nineveh, and Pliny (100 B. C.) records that yellow wax is bleached by exposure to sunlight. Even the action of the solar rays upon the human skin, reddening and tanning it, might have given a useful hint.

Approaching the subject from the side belonging to optics, we find the Italian philosopher Porta inventing the dark chamber, or camera obscura, about the middle of the sixteenth century. Crowds flocked to his house to see inverted pictures of the surrounding country, glowing in all the colors of nature, and depicted with a truth which no painter could equal, displayed upon a white screen within a room, the light being allowed to enter only through a small hole in a shutter. Porta soon improved this contrivance by placing a lens in the hole and by causing the rays of light to be reflected through the lens from a mirror, so that objects were seen in their natural or erect position. The "camera" of the photographer is nothing but Porta's chamber on a small scale, consisting of a "dark box," provided in front with a lens, which receives and concentrates the light upon a movable ground glass screen at the back of the box.—*Cornhill Magazine.*

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

ASSOCIATION OF OPERATIVE PHOTOGRAPHERS.

*Mr. Duchochois' Lectures.**

WATER (*Continued*).

Rain water, the purest water in nature, contains nitrate and carbonate of ammonia, sodium chloride and organic matters both vegetable and animal (germs). Spring and river water are likewise contaminated with organic matters and in organic compounds, such as the carbonates and sulphates of calcium, magnesium, etc., dissolved in carbonic acid.

The distilled water, unless specially prepared, is seldom free from volatile organic bodies and ammonia or its salts, the latter being shown by the yellowish discoloration of water on addition of a few drops of a solution of mercuric iodide in potassium iodide.

Pure water should form no precipitate with silver nitrate, nor be discolored when exposed to sunlight in presence of that salt.

Water sufficiently pure for photographic use can be prepared by dissolving 35 grains of silver nitrate in two gallons of water, and exposing it to the sun's light for a few hours; 15 grains of common salt dissolved in a little water are then added, and after two or three days' isolation, the water will be found quite clear and free from organic substances and salts objectionable in silver nitrate baths. Should the water be wanted for other uses, 25 grains of sodium chloride must be added and the water again filtered. It will then contain an infinitesimal quantity of sodium chloride, which can have no injurious effect in this solution employed in photography,

HYDROGEN DIOXIDE, $H_2 O_2 = 34$.

(OXYGENATED WATER.)

The oxygenated water was discovered by Thenard in 1818. This discovery is considered as one of the most important in chemistry, not only on account of the difficulties it presented, but because it demonstrated that certain bodies can produce chemical actions by their sole presence, thus lead, silver, gold, platinum decompose it in dissociating the combined atom of oxygen without being themselves oxidized.

Hydrogen dioxide is an inodorous transparent liquid, neutral to litmus paper, which it discolors, and possesses an astringent metallic-like test. Its properties present many anomalies. It oxidizes the sulphides of lead, copper, iron, but is scarcely without action on the sulphide of mercury and the sulphide of silver. It transforms sulphurous acid in sulphuric acid, decomposes sulphureted hydrogen and hydriodic acid into water and sulphur or iodine, and dissociates iodine from potassium iodide. It suroxidizes the oxides of barium, copper and iron, but those of silver, gold, platinum decompose it in being reduced to metal: $Ag''_2 O + H_2 O_2 = Ag_2 + H_2 O + O_2$.

Silver nitrate is not acted on by oxygenated water, but the silver from the ammoniacal nitrate is deposited.

Hydrogen dioxide bleaches organic matters like chloride, and attacks the skin in producing a painful blister.

Pyrogallic acid, and generally the organic matters in contact of air and alkalies, produces small quantities of hydrogen dioxide, which plays, without doubt, a certain part in the development of dry plates and in other similar photographic operations. This factor, to the knowledge of the writer, has never been taken into account; it deserves investigation.

To prepare the dioxide of hydrogen, *pure* moist barium dioxide is added progressively to sulphuric acid diluted in five parts of water until the acid is neutralized.

$$Ba O_2 + H_2 S O_4 = Ba S O_4 + H_2 O_2.$$

The solution of oxygenated water is liable to spontaneous decomposition, especially when it is concentrated and neutral, but by addition of a few drops of sulphuric acid or by hydrochloric acid, it becomes more stable, and may be kept for a long time.

Oxygenated water is now an article of commerce. It is used for bleaching purposes and cleaning engravings and old oil paintings. The black veil of the latter is produced by sulphurous emanations which form a sulphide with the carbonate of lead of the colors. This sulphide is oxidized and transformed in sulphate, which is as white as the carbonate and quite stable.

In photography hydrogen dioxide has been utilized to eliminate from the proofs the last traces of sodium thiosulphate (formerly called sodium hyposulphite).

Mr. A. Damry recommends the following method: Ten grammes of barium dioxide ground in water are added, little by little, to 100 cubic centimeters of water acidified with 10 cubic centimeters of glacial acetic acid. The proofs, having been washed in a few changes of water after fixing, are immersed in the clear solution, which transforms the sodium thiosulphate in barium sulphate.

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* Mr. Duchochois having been sick, these lectures were interrupted. The above is a part we have had in type some time in the hope that the lecturer's health would soon enable him to continue them.—EDS. OF BULLETIN.

The two reactions are thus represented :

$$(1).\ \underset{\text{acetic acid.}}{2\,C_2\,H_4\,O_2} + \underset{\text{barium dioxide.}}{Ba\,O_2} =$$

$$\underset{\text{barium acetate.}}{Ba\,(C_2\,H_3\,O_2)\,2} + \underset{\text{hydrogen dioxide.}}{H_2\,O_2}$$

$$(2).\ \underset{\text{barium acetate.}}{2\,(Ba\,C_2\,H_3\,O_2)\,2} + \underset{\text{hydrogen dioxide.}}{H_2\,O_2} + \underset{\text{sodium thiosulphate.}}{Na_2\,S_2\,O^3}$$

$$= \underset{\text{barium sulphate.}}{2\,Ba\,S\,O^4} + \underset{\text{sodium acetate.}}{2\,Na\,C^2\,H^3\,O^2} + \underset{\text{acetic acid.}}{2\,C^2\,H^4\,O^2} +$$

$$3\,H_2\,O \text{ water.}$$

Hydrogen dioxide is detected by the dissociation of iodine from potassium iodide *in presence of ferrous sulphate.*

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392 BOWERY.

MEETING May 6, 1885.

Pres. POWER in the chair.

Mr. George C. Sievers was elected a member of the Association. Mr. Mildenberger reported that, on account of illness, Mr. Gubelman would not be present to deliver his lecture on "Instantaneous Photography." The various journals were received with thanks of the Association. The business of the meeting having been disposed of, the question-box was opened and the following questions read :

Does diaphragming a lens down increase the area of the circle of light on the ground glass? For instance, it is said of a lens that it will cover a 11x14 plate, or by diaphragming it down, it will cover a 14x17 plate.

Mr. BUHLER—It is a mistake to say that diaphragming a lens increases the area of the circle of light on the ground glass; diaphragming only increases the sharpness of field at the expense of rapidity.

Mr. MAIN—It depends upon what you are doing with the lens ; you can take a lens that will only make a 5x8 view and, by diaphragming, can make a 14x17 copy with it.

Mr. BUHLER—If you use a 5x8 lens to make a 14x17 copy of line work, the edges will not be sharp or true ; diaphragming does not increase the circle of light, but only sharpens the field.

The next question was : What is the cause of a metallic lustre on tintypes ?

Mr. SCHAIDNER—The color of a tintype should be a creamy white, but I have seen them with a silvery metallic lustre, the cause of which I do not know.

Mr. BUHLER—I think the bath must have been overcharged with organic matter.

Mr. POWER—I think I had the same trouble one time ; my plate was over-sensitized and over-exposed, and the cyanide solution was too strong ; on remedying these things, the metallic effect was not apparent.

Mr. FAULKNER—It seems to me there was too much acid somewhere, either in the bath or in the developer ; and possibly there was over-development. A too acid bath and very thin collodion give the same effect.

Mr. BUHLER—If we could see the work, we could tell much better ; in over-development, you are building up silver as on a negative.

Mr. SCHAIDNER—I stop development when the detail begins to show in the shadows ; I have made tintype before with the same collodion, and obtained excellent results.

Mr. FAULKNER—See that your bath is not too acid and do not use one-half the usual quantity in your developer.

Mr. SCHAIDNER—I have always understood that a tintype bath wanted to be quite acid.

Mr. FAULKNER—That is an old theory that I contest ; I think a too acid bath makes trouble.

Mr. POWERS—I would like to ask the printers present how they precipitate the gold in their waste-toning bath.

Mr. SPROTTE—The best way is to throw it down with sulphate of iron.

Mr. MILDENBERGER—You should first acidify your toning solution.

Mr. BUHLER—Furnish me with a 15-grain bottle of gold and I will put it in a toning bath, precipitate it, and recover every grain of gold without acidifying the solution.

Mr. MAIN—The action of light will precipitate the gold in the toning solution.

Mr. FAULKNER—Those who make a business of refining wastes recommend acidifying the toning solution before precipitating. I asked one of them the object of doing so, and was told it was to get rid of the excess of iron in the precipitate ; sometimes they roast the precipitate and then draw a magnet through it to extract the iron.

Mr. POWER—I think I have saved more gold since acidifying my waste-toning bath before precipitating than I did before.

Mr. BUHLER—You can get pure gold by precipitating once, but by cutting up again with nitric and muriatic acids, and then adding 100 grains of iron for every 20 grains of precipitate, you will get the pure gold.

W. EDDOWES,
Secretary.

P. S.—Our last discussion meeting was given up to business, and there were no items of interest.

W. E.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Meeting May 12.

PHOTO-MICROGRAPHY BY LAMP LIGHT.

BY W. H. WALMSLEY.

THE difference between a Photo-Micrograph and a Micro-Photograph is so clearly defined in the supplement to Worcester's Dictionary, that in view of the indiscriminate manner in which both terms are applied to the same subject by various authorities, I am led to quote therefrom, in the hope of adding my mite toward the establishment of uniformity in the meaning of the two terms. It is a matter of no great importance, to be sure, but if the distinction therein given were generally accepted, we should be saved a considerable amount of annoyance at times when the next meaning of a writer is ambiguous.

" A Photo-Micrograph," says this authority, " is an enlarged representation of a microscopic object, produced by throwing its image through a suitable combination of lenses, as of a microscope, on to a sensitized plate."

" A Micro-Photograph," says the same authority, "is a photograph of proportion so minute that it requires to be examined by the microscope."

Here we have the difference clearly and distinctly defined. Each term was so recognized and used by the late Col. Woodward, the most eminent worker in photo-micrography the world has yet seen, and it is to be hoped his successor will follow where he led.

It is not my purpose this evening to enter into the history of photo-micrography, or of the work done by others in that direction. Brief references to the causes which led me into the fascinating pursuit, with such practical hints, afforded by my note book, as may be of value to others, will consume as much time and patience as you will probably care to bestow upon the subject at present. If these notes, the result of much real work, should be of any assistance to others, I shall feel amply repaid for the small amount of time given to their compilation.

Having for many years been a working microscopist, it had never ceased to be a matter of regret that want of skill with the pencil prevented any records of my work (other than the prepared slides) being made. The beautiful drawings under the camera lucida by more skillful hands, were objects of envy which I could not hope to emulate. Then came the magnificent photo-micrographs of Col. Woodward, produced by his wonderful skill, backed by all the resources in the way of apparatus, furnished by a liberal government, as well as the work of other eminent men at home and abroad, all requiring, however, apparatus and appliances far beyond the reach of one whose means were limited, and whose only leasure time was in the evenings after the friendly light of the sun was extinguished. But a helping friend was near at hand. The gelatine dry plate was born into the world, and workers of all conditions were placed upon an equality, in so far as their tools were concerned. The barriers were removed, the way made clear for all who might choose to travel it. To be sure, the road did not run straight ; there were many windings and doublings, with no guideposts to the nearest cuts; each traveler had to plod his own course along the winding way, since no practical instructions had ever been given to the world. Results were freely shown to excite the envy of would-be travelers, but practical instructions for the successful journey were not available.

It may not be amiss to recall the incidents attending the production of my first negatives of a microscopic object. For some months previously my spare moments had been devoted to the fascinating work of out-door photography with gelatine plates, which I had pursued with all the ardor common to a novitiate so well known to all of you. My first essay was made with the so-called pocket camera of Walker, a little square box without bellows, carrying a plate 2¾ x 3¼ inches, the focus being adjusted by sliding the tube carrying the single achromatic lens. With this little box very fair work may be done, and I produced many negatives which were a source of pride and pleasure. The advent of winterish weather seemed to forbid further out-door work ; interiors were unsatisfactory, and the camera was reluctantly laid aside to await the advent of another summer.

One evening, while engaged with the microscope, the thought suddenly occurred, Why not try to make a photograph of that object? This happened to be the small, eyeless flea of the mole, not a very perfect specimen, having lost several of her feet, and not at all adapted to a beginning in photography (as I afterward learned), having a thick, yellow, chitinous skeleton, rather opaque, although mounted in Canada balsam. The objective in use was Beck's 1½ inch First Class series, with 10-inch tube inclined at an angle of 45 deg., and A eyepiece; illumination, the light of a German student's lamp reflected by the concave mirror of the microscope, without any condenser. I found that upon removing the top of the microscope ocular, and the lens tube of the camera box, the outer tube of the latter exactly fitted into that of the former, holding the camera in place, and revealing to my delighted eyes a small but perfectly defined image of the specimen on the focusing screen. To transfer this to a sensitized plate was now the problem I had to solve. There was absolutely no guide procurable; nothing had been published, so far as I knew, on the subject as connected with gelatine plates and lamp-light illumination. Experiment alone must be my teacher. The character of the plate suitable, with length of exposure adapted to the object, could only be determined by actual experiment.

Choosing the most sensitive plate in my possession (Carbutt's J. C. B.), an exposure of five minutes was given, and development with ferous oxalate followed. I will say nothing of my feelings as I watched the latter and the growth of the image. You have all made your first negative. Suffice it to say, the exposure proved to have been correct; a clear, clean negative of proper density was the result. But where was the crisp sharpness of outline and detail so clearly seen when examining the object through the ocular in the microscope itself, or its image upon the ground glass? This negative was sadly wanting in sharpness. I was certain that focusing screen and plate holder registered exactly, for the Walker camera is very accurately made, and my out-door negatives had all been very sharp and crisp. Suddenly I remembered having read that all microscope objectives of powers under one-fifth of an inch require special correction to render the visual and actinic focii co-incident, which correction had not been applied to the objective now employed. Thus the mystery of a sharp image on the ground glass, and a dull one on the gelatine film, was solved.

The Messrs. Beck have since made for me a series of object glasses, from four inches to four-tenths of an inch focus, corrected for photographing, and their performance on all classes of subjects is perfectly satisfactory. From a quarter-inch upward to the highest power I have employed, no special correction has been necessary. From the negative (the making of which has just been described) I have printed a positive, which will be shown on the screen this evening, together with another made from the same specimen, with a corrected 1½ inch, and an exposure of ninety seconds on a slow plate, leaving you to make your own comparisons as to the advance made since that first exposure.

Begging pardon for this lengthy preface, which, however, it is hoped has not been void of interest, I shall now proceed to describe the apparatus I am using at present, passing unnoticed the various stages by which its comparative perfection has been reached. Four essential parts make up the complete outfit. A microscope with its object glasses and other accessories, a camera with long extension bellows, a suitable lamp for illumination, and a solid platform to carry the entire apparatus. Any microscope with joint to the body, permitting same to be inclined to a horizontal position, may be employed, but the essentials to accurate and comfortable work are as follows: A heavy, solid stand, perfectly firm in all positions, with a short body (the 6-inch continental model is admirable); good coarse adjustment for focus and a very delicate fine one, the latter controlled by a large milled head, in the periphery of which a groove is turned to admit the focusing cord, hereafter to be described. A solid mechanical stage, rotating in the optic axis is most desirable, and a substage moved by rack and pinion, capable of carrying an achromatic condenser, polariscope, etc., is almost indispensable. The objectives should be the *very best*, specially corrected for photography in all powers under the one-fifth of an inch, and of moderate angular operation. Perfect corrections of chromatic and spherical aberations, with the greatest penetrating and defining powers, are essential features in objectives designed for photography. Without making any invidious comparisons, I may remark that all these features are embraced in the object glasses of R. & J. Beck, and can heartily recommend them for this purpose. A Binocular microscope can be used quite as well as a Monocular, by simply shifting the prisms; but if an instrument is to be selected on purpose, the latter is recommended in preference to the former. In either case the tube is to be lined with black velvet or black paper, otherwise there will be a reflection from its inner surface, which will cause a ghost in the negative. An accurately centered double or triple nose piece, carrying as many objectives of different powers, will also be found an immense convenience, saving much time and labor in choosing the proper object glass for any particular purpose. I use a triple nose piece, upon which are always secured a two-third, a four-tenth, and a one-fifth inch objective, being the powers most generally used. If the one-fifth is to be employed in making an exposure, the object is readily brought into the center of the field under the two-thirds by a simple rotation of the nose piece; the one-fifth is now brought into position, when the object will be found to occupy the center of its field of view. Much valuable time, which would otherwise be expended in finding a minute object under so considerable a power, is thus saved.

Most chemical crystals, being colorless and nearly invisible under ordinary illumination, require to be examined and photographed by polarized light. For this purpose the polariscope prisms should be of large size and both mounted in revolving settings. The lower prism should also fit with a substage capable of carrying an achromatic condenser above, in order to properly illuminate the field with any power above the two-third inch. The achromatic condenser itself should consist of at least two combinations of different powers and of wide angular aperture. It is always necessary to employ a condenser of more power than the objective. If a one-fifth is being used the illumination should be by a four-tenths to get the best results, while a one-tenth should be illumined by a one-fifth. For lower powers the ordinary bull's eye condenser, in connection with a diaphragm of varying apertures, will be found all sufficient.

For the great majority of workers the following powers of object glasses are recommended: 2 inch or $1\frac{1}{2}$ inch, $\frac{2}{3}$ inch, $\frac{4}{10}$ inch, $\frac{1}{5}$ inch and $\frac{1}{10}$ inch, the latter an immersion, capable of being used with glycerine, since water evaporates too rapidly for practical use. With these powers, and a camera having thirty inches extention of bellows, a range of powers from about ten to six hundred diameters may be obtained; while the addition of an achromatic amplifier will increase the power of the $\frac{1}{10}$th to more than one thousand diameters without perceptible loss of light or definition.

All of the foregoing features are combined in the microscope I am using for this work, and, in enumerating them, I have but described that very perfect and complete instrument. We pass now to the second part of our outfit—the camera.

(To be Continued.)

[*From the Photographic News.*]

BLISTERS ON SILVER PRINTS.

BY W. M. ASHMAN.

WHAT causes blisters in albumenized silver prints is a question of frequent occurrence.

Societies' question-boxes, too, occasionally contain similar queries for information, and after much discussion, in which ancient ideas are generally revived, and modern ones aired, the subject invariably drops pretty much in the same position as where it was picked up. An object has been achieved, however, for knowledge acquired by the querist is put in practice for a while with beneficial results; though upon the cessation of the evil complained of, it receives, as a rule, very little further consideration, until questions upon the subject are again circulating.

It is curious to note how regularly these complaints are made; and to my way of thinking this periodical outcry proves in a large measure that the phenomenon is influenced by excessive changes of temperature. At the present season, it is by no means unusual for the thermometer to register during the night freezing point, or thereabouts; and this cannot fail to do other than exert some influence on the image film, such as the thin and insoluble albumen coating in the printed state represents. If it were only practicable, or only possible to obtain the same degree of purity in the whites and resisting power between the two surfaces by supplementing an albumen substratum for the present starch or gelatine method now employed, we might be sure that blisters would once for all depart, since a layer of albumen will not, under ordinary circumstances, adhere with equal tenacity to a surface which, by the very nature of its preparation, cannot be considered even, as it would to a surface having a nearer approach to perfection, such as a substratum of a similar substance would present.

Doubtless, if it were only possible to test the power of adhesiveness and expansion existing between any one portion of the prepared paper and the coating thereof, we should be in a better position to define the incipient cause of blisters; since such a method is not practicable, it becomes desirable to search in another direction for the probable germs of the evil.

As a general rule, the dealer becomes the greatest sufferer; he is the recipient of all the wrath that can be instilled into a letter, the length of which alone would show that the writer possessed no sympathy for the reader. The dealer in turn improves the occasion by retaliating upon the albumenizer or sensitizer, as the case may be, who, with hackneyed excuses, allows the matter to rest, until he shall have communicated with the mill—result, no answer. Much of the annoyance is caused by insufficient knowledge on the part of the user, while his lack of experience might easily be supplemented, if producers would each agree to give explicit instruction for the treatment of their papers, in so far as past experience has enabled them to do.

Problems will doubtless continue to present themselves for solution, such, for instance, as one or more portions of the same ream, printed and otherwise manipulated in different localities, giving trouble, when the remaining portions, in the hands of other manipulators, show complete immunity from the defect complained of. Why this is thus, forms the debatable ground for argument, which up to the present has never been wholly cleared of doubts. We might elucidate a clearer conception of the cause by staining a sheet of albumenized (Rive) paper with a dilute solution of iodine, and examine the same under a microscope before and after removal of the albumen. Those portions not exhibiting the well-known iodide of starch color would have failed to have established perfect adhesion between the two layers.

Saxe paper, not being sized with starch like the foregoing, would require a slightly different treatment, such, for instance, as a wash of potassium bichromate over the albumen surface, and after exposure to light, a removal of the albumen film, followed by a subsequent microscopical examination.

The effect of extreme heat upon a print is not so marked as might be expected, for the image once obtained on albumen is not easily removed in boiling water; notwithstanding that the sizing of the paper is abstracted, the albumen remains undisturbed. If we go to the other extreme, and allow the temperature of the washing waters to fall below 35° F., it is only with the greatest care such prints can be afterward handled. Now it is customary with some printers to give a final wash in hot water, and there is no objection to this proceeding, provided that the solutions have been kept at a high temperature all through the manipulation; but alternately boiling and freezing is productive of much annoyance and many blisters.

That small blisters do little or no harm under ordinary circumstances is generally conceded; also that such are usually due to a highly surfaced paper and unequally heated solutions; but let such prints be exposed in a damp state to very cold air, 32° F., for instance, and it is surprising how easily the portions of the albumen can be removed; moreover, upon again soaking prints so exposed in hot water, blisters of large size are readily formed. An experience of this kind is not often met with; still it has been recorded upon one or two occasions, and is worthy of remembrance, since it is one of the failures attributable to the user, and not the manufacturer, of albumenized or ready-sensitized paper.

Every one knows that a strong silver bath has a tendency to detach the albumen in very thin skins, more especially during high temperatures; doubtless those who use preserved paper do not meet with this difficulty, and a precaution of this kind would only apply to those who sensitize their own paper. With highly-surfaced papers, the writer has often found it necessary to reduce the strength of the sensitizing bath to less than thirty grains of silver nitrate per fluid ounce.

Certain remedies might here be mentioned, which, although known to many manipulators, may not be familiar to beginners. To classify the remedies, it may be said that equality of temperature throughout is of primary importance, and beyond which it is seldom really necessary to seek relief. Next in order may be mentioned the degree of concentration of the sensitizing bath; the stronger the silver bath, the greater the tendency to blister. This was, in a measure, overcome some years ago by a photographer in the United States—Professor Towler, I believe—who replaced an eighth part of the water used in maktng up the bath with that quantity of alcohol. The only objection to that method was that the paper would not keep in summer time so well as when the alcohol was absent. Anthony's plan of placing a small lump of gum-camphor and a crystal of alum in the filter tended very much to keep the paper, and prevent blisters. These methods, of course, refer to freshly-sensitized papers.

Preserved sensitive paper occasionally exhibits a very troublesome form of blister, inasmuch as fully one-half of the image is often so detached. The makers generally recommend the final washing before toning to consist of an alkaline bath; if the alkaline solution used be dilute, there is not the least doubt but its effect will prove beneficial, so far as it assists rapid toning; but assuming there be acid used in the preservation of the paper, and the alkaline carbonate bath be too strong for the purpose, it is easy to imagine what would happen. If a violent disengagement of carbonic acid gas took place within the texture of the paper, such a force evolved would be sufficient to separate the two surfaces, and the inevitable result would be blisters, while other portions of the same ream, differently treated, would show no trace of the defect, because the alkaline bath was made with greater care, and the prints were equally acted upon. It is a matter of considerable importance that this alkaline solution should only be employed in very dilute proportions, since the entire removal of the albumen image is a comparatively easy matter, under alkaline conditions; therefore, where acid is known to be absent, salt may be substituted for the alkali with considerable advantage.

Other means for accomplishing the end in view might be reiterated, such as soaking the prints after toning in a bath containing four ounces of common salt per gallon of water, and a faintly alkaline fixing bath, with which some printers find it advantageous to put a small quantity of alcohol. When an equal temperature of the washing water cannot be relied upon, it is sometimes advisable to dilute the fixing bath gradually with water, and thus rid the prints of the fixing agent in that manner. The treatment of prints in saline baths, made with three per cent. of common salt or ordinary commercial alum, tends greatly to check the after formation of blisters, while they also play the rôle of eliminators. Other methods have from time to time been published in these pages, and I feel it to be incumbent that some excuse should be offered for quoting experiences of others. My excuse is this. Two serious cases—one occurring in the North and the other in the South—were recently brought under my notice. In both cases portions of the same batch were used, being distributed in the ordinary course, and these were the only cases where blisters were observed. Upon inquiry, it was conclusively proved that the temperature was low upon both the occasions complained of, and an increased temperature resulted in an absence of blisters.

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[*From the "Photographic News*."]

HOW TO PHOTOGRAPH MICROSCOPIC OBJECTS.

BY I. H. JENNINGS.

LESSON X.—PREPARING VEGETABLE TISSUES FOR PHOTOGRAPHY.

DRY-MOUNTED vegetable preparations are not of much use to the photo-micrographer, except it be certain scales, such as those of the *Deutzia*, which can be successfully photographed with a low power by reflected light. In most cases the use of a bleaching liquid is necessary to get rid of the coloring matter, which must be removed before the tissues can be set up as transparent objects. The following bleaching liquids may be used: 1, Nitric acid; 2, methylated alcohol; 3, chlorinated soda.

1. Nitric acid must generally be used in a very dilute form, as many vegetable tissues, even those strongly impregnated with silica, are destroyed by it when pure. The stems of grasses, horsetails, and even leaves, as those of the *Deutzia*, may be bleached by gently heating in very dilute nitric acid. When the object appears sufficiently transparent, it must be well washed in distilled water to remove all trace of the acid, floated on a slide, and dried under cover. If the acid be used too strong, the object is decomposed, while if the washing be imperfect, crystals will form in its substance and render it useless.

2. Soaking in alcohol does very well for many objects, such as cuticles and thin, semi-transparent leaves. They should be left in alcohol for some hours; and when they have lost most of their chlorophyl the alcohol must be poured off, and some fresh added, until the objects become white. They may now be transferred to benzole or turpentine for some hours, when they are ready for mounting. Boiling in alcohol is hardly advisable, for although it considerably hastens the bleaching, it tends to make all plant-tissues too brittle for mounting.

3. The best mode of bleaching vegetable tissues is by means of chlorinated soda. The solution is prepared as follows: Three or four ounces of good chloride of lime are taken and put in about a quart of water. Stir the mixture a few times, and allow the sediment to settle; after this the liquid had

better be filtered through coarse filter-paper; this is better than pouring the clear liquid off. Next, pour a strong solution of carbonate of soda into the chloride of lime solution so long as a precipitate takes place, and allow the precipitate to subside. When clear the solution should be tested with a few more drops of carbonate of soda, to ascertain if all the lime has been precipitated; if not, more should be added, until no lime is left in the solution. Most of the solution, when clear, can be poured off, and must once more be filtered; after which it should be stored in black or dark-colored bottles, and well-corked, since both air and light speedily bring about decomposition.

A series of small glass pots should be provided to bleach the specimens. Shallow pomade pots are very suitable. Before leaves are immersed in the fluid, it is best to wash them in clean water with a soft brush, since all leaves are more or less covered with fine dust, which will sink into their substance if not removed when they are fresh. When they are quite clean, they may either be put in the bleaching liquid at once, or put between clean blotting paper to dry. Dried leaves, as a rule, bleach more rapidly than green ones.

When a leaf happens to be more deeply colored than usual, it is a good plan to immerse it in alcohol until most of the color has been removed. This much facilitates the bleaching process. The time which tissues require to be soaked varies considerably. Some become translucent in a very few hours, while others take many days; others will show green patches which obstinately refuse to be bleached. In this case, remove the leaf, wash it well, and place it in alcohol for some hours. In this way all the chlorophyl will be dissolved out, when the soda solution will complete the processes. Care must be taken not to put too many leaves at a time into one vessel; three or four is the average number.

When properly translucent, the leaves or tissues must be removed from the soda solution, and washed in distilled water, changing the water every few hours. If the tissues do not contain Raphides, the addition of a little hydrocloric or nitric acid to the second or third washing will increase their transparency. *Sulphuric* acid must not be used, or crystals of sulphate of lime, which is only slightly soluble in water and acids, may be formed in the tissues, and cannot be removed.

About twenty-four hours is necessary to properly wash the leaves; less time is not sufficient and a longer immersion tends to disintegrate delicate tissues. The washing completed, they should be placed in alcohol, in which they must remain for some hours, and afterward be transferred to turpentine until required for mounting.

The above bleaching process must be applied to sections of wood which are too strongly colored for photography. It is hardly necessary to observe that all sections which are to be photographed should be of extreme thinness. Many which answer very well for examination under the microscope are far to thick for the photo-micrographer. Light-colored sections, such as those of white pine, require merely saturation with benzole before mounting in the balsam solution. A section of deal, to show the characteristic "discs," should be mounted dry.

Spiral vessels, scalariform tissue, etc., will require but little treatment; the former, after drying and washing in alcohol and benzole, may at once be set up in balsam.

Cuticles may be prepared in the same way. In the case of very transparent tissues, staining will be of great use. Judson's dyes answer very well for this purpose, but all blue stains should be avoided in objects intended for photo-micrography.

Plant-crystals or raphides, may be prepared either *in situ*, or separately. When mounted *in situ*, bleaching with alcohol is alone admissible. Raphides may be obtained from most plants by laying a leaf or stem on a slide, with the cut end about the middle; a gentle rolling pressure with a pencil will squeeze the juice and raphides out on the glass. Wash with alcohol, pour over a little turpentine, and mount in the usual way.

The following furnish good examples of raphides: Duck-weed, the onion, the willow-herb, the galium, or goose grass. The large prismatic crystals of the onion or garlic polarize splendidly, and show better in a photograph when polarized light is used. In fact, many objects that are far too transparent to make good photographs can be easily managed by putting on the polariscope. When this is of no use, a piece of fine ground glass, or oiled paper, immediately below the slide will be of great service in softening the light. This will prolong the exposure, but give results that could not otherwise be attained.

For instruction as to staining vegetable tissues, the student is referred to a very valuable and practical paper by Dr. George D. Beatty, which appeared in "Science Gossip," for May, 1876; also to "Practical Microscopy," Chapter 12.

EXHIBITION OF THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

PICTURES will be received for *competition only*, and in accordance with the following rules and classification:

RULES.

1. Both amateur and professional photographers may compete in all classes, unless otherwise specified.

2. No photographs will be received on single mounts less than 5 x 8 inches (except stereoscopic). All smaller than this size must be grouped on a larger mount for convenience in hanging. No unmounted prints will be received, except from foreign exhibitors.

3. The same picture may be entered in more than one class, but can only be awarded one diploma. No diploma will be awarded in any class in which the pictures are of insufficient merit, as decided by the judges.

The committee reserve the right to reject all or portions of any exhibit offered.

4. All entries must be made on blanks, which will be furnished on application, and which must be filed with the committee *at least five days* in advance of the exhibition, giving (when possible) the following information: number of pictures; size of frame or mount; classification; subject; lens; plate; if for sale, price; exhibitor; address; society.

Ten per cent. commission will be retained by the Society for any pictures sold during the exhibition.

5. Each print must have a label attached by the exhibitor, so as to be read from the front, stating class, subject, lens, plate, exhibitor. Blank labels will be furnished on application.

6. All expenses for transportation to the exhibition must be prepaid by the exhibitors. Return charges will be collected by carriers.

7. No pictures will be received later than five days prior to the opening of the exhibition.

8. No pictures shall be withdrawn before the close of the exhibition.

9. The Society will not be responsible for any loss or damage that may occur to any exhibit, but will use all reasonable care to prevent such occurrence.

10. Advertising in any form, in connection with any exhibit, is strictly prohibited.

CLASSIFICATION.

By professionals only.

1. Landscapes—any size.

By amateurs only.

2. Landscapes over 5 x 8 inches.
3. Landscapes 4¼ x 6½ to 5 x 8 inches, inclusive.
4. Landscapes under 4¼ x 6½ inches.

By professionals only.

5. Marine views—surf.
6. Marine views—sail.

By amateurs only.

7. Marine views—surf.
8. Marine views—sail.

By amateurs only.

9. Figure compositions over 5 x 8 inches.
10. Figure compositions 4¼ x 6½ to 5 x 8 inches, inclusive.
11. Figure compositions under 4¼ x 6½ inches.

"Figure Compositions" are to include groups, and all pictures in which one or more figures make the principal interest of the picture, and which are not included in the "Special Composition" classes, Nos. 15, 16, 17 and 18.

By ladies only.

12. Landscapes.
13. Marine views.
14. Figure compositions.

Special compositions.

15. Cottage door.
16. Wayside fountain.
17. Village smithy.
18. Ploughing.
19. Animals.
20. Still life.
21. Flowers, fruit, etc.
22. Trees.
23. Snow and ice.
24. Architecture.
25. Interiors.
26. Sculpture.
27. Machinery and other manufactured objects.
28. Microphotographs.
29. Enlargements.
30. Instantaneous effects, not otherwise classified.
31. Platinum prints.
32. Gelatino-bromide or chloride prints.
33. Porcelain pictures.
34. Transparencies.
35. Set of 6 lantern slides—negatives and slides to be made by exhibitor.
36. Set of 6 to 12 pictures, taken in a foreign country, or by a foreign exhibitor.
37. Pictures by any new process not before publicly exhibited.

INTERNATIONAL EXHIBITION OF PHOTOGRAPHY AT OPORTO, SEPT. 1, 1885.

PROGRAMME AND RULES.

THE Exhibition, which will take place in the great central hall or nave of the Crystal Palace in Oporto, will embrace every branch referring to photography as well as its most recent applications to Science, Art and Industry.

The Board of Directors of the "Crystal Palace" and the Society "Photographia Moderna," seconded by Portuguese amateur photographers, contributors to the art journal *A Arte Photographica*, intend to open on the 1st of September, 1885, an "International Exhibition" of works, products, etc., belonging to every branch of photography and heliography. All *photographers and amateurs*, *manufacturers of photographic apparatus and implements* referring directly to the *art* in question, whether Portuguese or foreign, are respectfully requested to take part in this concourse. For further information we beg to present our readers with the following programme adopted by the Commission:

ARTICLE 1.

The opening of the Exhibition will take place in the Crystal Palace of Oporto on the 1st of September, 1885, and the closing will be on the 31st of October of same year.

ARTICLE 2.

Persons wishing to become exhibitors are requested to communicate up to the 30th of April, 1885, with the secretary of the Commission, and indicate the space which they will require, as well as the class or nature of the objects to be exhibited, in conformity with the conditions specified in the different clauses of this programme.

ARTICLE 3.

All objects to be exhibited must be forwarded before the 1st of July, 1885, at the expense of the senders, to the following address: Commissão Executiva da Exposição Internacional de Photographia, Oporto.

ARTICLE 4.

The articles must be accompanied by a list, indicating the number of objects sent, signed by the exhibitor, and specifying whether the space which he wishes to occupy be horizontal or vertical.

ARTICLE 5.

The exhibitors must secure their proofs in appropriate frames. In order to avoid expenses and difficulties to the exhibitors, the Commission will take upon itself to furnish suitable glass cases at the most moderate prices, a previous demand having been made by the exhibitor to this effect. The proofs must be sent in proper condition, according to the custom on such occasions.

The account presented by the Commission must be previously settled by the exhibitor.

ARTICLE 6.

The exhibitor is requested to inscribe his name on each separate proof, or frame containing several proofs.

ARTICLE 7.

It will be necessary to mention and specify:

1. The subject.

2. The negative, process whether (as in the case of wet or dry collodion) collodion or gelatine emulsions, albuminous as well as positive processes. Every indication regarding photographic processes in general will be thankfully received.

ARTICLE 8.

Exhibitors wishing to sell their proofs, frames or products of whatever sort, must give notice of their intention to the Commission, and will please name the price, which will be affixed to the object during the whole time of the Exhibition.

ARTICLE 9.

No proof or object can be withdrawn from the cases before the closing of the Exhibition, without the special permission of the Executive Commission.

ARTICLE 10.

The same Commission reserves to itself the right of rejecting such objects as may be considered unworthy of being exhibited.

ARTICLE 11.

The Executive Commission will place at the disposal of a special jury gold, silver and copper medals and honorary certificates, to be conferred on the most praiseworthy exhibitors, whose products will enter into the following categories:

A. Prints of fatty tints in gelatine layers on metal or glass.

B. Heliographic impressions (photogravure sur cuivre).

C. Woodburytype, photoglyptie, stannotypie, and other processes.

D. Photolitho and photozincography, gilotage, etc.

E. Carbon photography, chromotype, photochromia on paper, glass, wood and porcelain.

F. Photography on albuminous paper, collodio-chloride, gelatino-bromide, gelatino-chloride, platinotype, etc.

G. Cyanotypia and analagous processes.

H. Enamels, vitrified photographs, colored photographic processes, applied to pottery.

I. Amplifications of cliches, portraits and landscapes. Special positives for projections, together with such explanations appropriate for teaching and scientific lectures. Amplifications in gelatino-bromide, chromotypia, ferro prussiate, collodio-chloride.

J. Apparatus and photographic implements, specialties of work referring to the operations of scientific expeditions, for tuition, industry, etc.

K. Photomicrography, different appliances of photography relating to micrographical studies and investigations.

L. Works and journals on photography.

M. Photographically illustrated publications and photomechanical processes.

N. Gelatine plates, paper prepared for the different processes, portrait cards and different sorts of card-board, chemical products, albums, passepartouts, together with whatever ornamentations may be applied to photographic proofs.

ARTICLE 12.

The special jury for the awarding of prizes will be composed of a certain number of members indicated by the Principal Commission.

ARTICLE 13.

The Principal Commission takes upon itself to regulate the general expenses of organization, installation and administration.

ARTICLE 14.

Ten per cent. will be received on the value of articles exhibited and sold during the Exhibition.

ARTICLE 15.

The articles belonging to the different exhibitors will be sent back to them directly, at their expense and risk, within the term of thirty days after the closing of the Exhibition.

ARTICLE 16.

Any case unforeseen, and not included within the clauses of these regulations, will be resolved by verdict of the Principal Commission. Against this verdict there will be no appeal.

The Principal Commission.

DIRECTION OF THE CRYSTAL PALACE.
LEOPOLDO CIRNE.
ILDEFONSO CORREA.
CARLOS RELVAS.
EDUARDO ALVES.
AUGUSTO GAMA.

This Exhibition is under the patronage of the King of Portugal, who will officiate as President.

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POSTAL PHOTOGRAPHIC CLUB.

RULES.

1. THE affairs of the Club shall be managed by a committee of five persons (three of whom shall be residents of New York), to be elected by the members. Three of the committee to retire annually, but to be eligible for re-election.

2. The committee shall have power to refuse to admit any candidate for membership in the Club, or to compel any member to retire.

3. The decision of the committee shall be final in all matters connected with the conduct of the Club.

4. The committee shall elect from their number a President and a Secretary, who shall also act as Treasurer. Both to retire annually, but to be eligible for re-election.

5. The President shall preside at the meetings of the committee. The Secretary shall conduct the correspondence, arrange and send out the albums, and furnish an account of the receipts and expenditures of the Club at least once in every twelve months.

6. Any person practicing photography, as an amateur, may become a member (subject to rule 2) on payment of entrance fee and subscription.

7. Each member shall pay an entrance fee of 50c. and an annual subscription of $2, or half-yearly $1.25, in advance.

8. All dues shall be payable April 1, but any member entering after October 1 shall be allowed to pay the half-yearly subscription up to April 1 following.

9. Subscribing members shall pay an entrance fee of $1, and annual subscription of $2.50, and shall receive the albums and note-books in their turn, but shall not be required to send in prints for the benefit of the Club.

10. Any person may become a subscribing member, subject to similar conditions as active members (see rule 6).

11. Any member not sending the amount of the dues to the Secretary within four weeks from April 1 (or of election if a new member) shall be considered as having withdrawn from the Club.

12. Each active member shall send to the Secretary, for the benefit of the Club, at least six prints annually (and as many as possible in excess of that number), from negatives exposed and developed by him, together with particulars of the kind of plate used, lens, exposure, name or locality of subject, and any other interesting information, entered on slips provided for the purpose.

13. The prints contributed must be work of the member sending them, and may be made by the silver, platinotype, cyanotype, carbon, or any other process; they must not be larger than 6½x8½ inches, and must be sent unmounted to the Secretary, suitably protected in a package, indorsed with the name of the sender and prepaid.

14. The name of any member who fails to send in six prints annually shall be dropped, and may be restored only on payment of entrance fee and subscription as in the case of new members.

15. The prints sent in by members to the Secretary shall be circulated among the members in albums, together with note-books for criticisms on the photographs circulated, queries and hints, or useful information on photographic subjects.

16. The prints in the albums shall be numbered for reference, the name of the senders being also given, unless they signify to the Secretary that they do not wish their names to appear.

17. No member shall keep an album for more than three days, before the expiration of which time it shall be forwarded, postage (or express) prepaid, to the member whose name stands next on the list sent with the books.

18. No member shall in any way mark or deface the album.

19. Any member receiving the albums or note-books in a damaged condition, or failing to receive them in due time, shall immediately notify the Secretary to that effect.

20. After the books have gone the entire rounds of the members, they may be sent around again in order that the criticisms and notes may be read. The note-books and albums, after having been circulated in accordance with the above rules, shall be returned to the Secretary, who shall be responsible for their safe-keeping while in his charge.

21. Any surplus funds shall be used, as the committee think best, for the advancement of the Club.

22. Each member shall send to the Secretary, on blanks provided for the purpose, the number of the photograph which, in the album under consideration, is deemed worthy of the first prize, and also of that one next in merit.

23. In each album a first prize of $2 in cash shall be given to the print receiving the largest number of votes for first prize, and a second prize of $1 in cash to the print receiving the next highest number of votes. The result shall be declared and the prizes paid as soon as all the votes have been cast.

Secretary's address, 50 West Thirty-eighth street, New York.

What Our Friends Would Like to Know.

Toning Blue Prints.

GENTLEMEN: For the information of the many amateurs who read the BULLETIN, I desire to relate my experience in toning "blue prints," which I stumbled on when trying to change a blue print to a brown.

I had heard one of the members of the N. Y. A. P. Society state that a blue print could be changed to look like a silver print by submitting it to certain acids. Well, when printing a blue print the other day I thought I would experiment and see what I could do with the acids I had in my dark room.

I took a blue print that had been greatly over-exposed, and that I considered of no account, and soaking it a few moments in water so that it would lie perfectly flat in the tray, then pouring off the water I poured on a solution of: water ½ oz., oxalate of potash ½ oz., and in a minute or so the blue print changed to a light green, very pleasing to the eye, and in the course of three minutes it changed to a brown, and then gradually faded away entirely, leaving only a *white* paper in my tray, with no apparent image thereon. I was so surprised at the changes made that I did not realize I was losing my picture until too late, as I supposed, to stop the action of the acid. The paper exposed to the light showed no picture on it whatever, but thinking it just possible some other acid or alkali would bring back in some mysterious way what was recently on the paper, I thought I would experiment further; so washing the paper and tray I poured on a weak solution of "hypo," and after a few minutes I was rewarded with the gradual appearance of the picture, which grew stronger and stronger, and whether it would have reached an intensity equal to the original, which, as I have stated, was over-printed, I cannot say, as I took the picture out of the "hypo" when it reached the stage I thought was about what I wanted.

So it seems that an over-printed blue print can be easily toned the desired intensity by this simple process: first, a bath of weak oxalate of potash, then a bath of hypo. This may not be new to many of your readers, but it certainly was new to me, and may be of use to many who have carelessly or otherwise over-printed when making blue prints.

CHARLES B. BARBER.

Iron Developer with Tartaric Acid.

A correspondent sends us the following formula, in which by the use of tartaric acid and exposure to light the iron developer is constantly kept in good condition. It is well worth a trial, although not new, having been previously recommended by M. Andra, of Paris:

"First bottle, 30 grammes of neutral oxalate of potash, 100 grammes of distilled water; second bottle, 30 grammes of sulphate of iron pure, 100 grammes of distilled water, 5-10 grammes of tartaric acid. This last should always be exposed to light.

"When you wish to develop, add four parts of solution No. 1 to one part of solution No. 2, and nothing more. In thirty or forty seconds the image appears and is completed. When the half tones and backgrounds are distinct, wash and wet again in a tray of clear water. Two minutes afterward wash again and pass to the fixing bath. When fixed, wash and pass to the bath of alum in order to harden the gelatine and eliminate the hyposulphite; ten or fifteen minutes afterward wash well. In instantaneous pictures add three to five grammes of a solution of hyposulphite, one part to 1,000 of water. In over-exposures, add a few drops of citric acid in four per cent. solution."

A specimen of work sent to us, and made with this developer, is exceedingly good.

A Hint on Retouching.—A correspondent writes: "After the bromide emulsion plate is fixed and washed, and set aside to dry, take it after one or two minutes or just enough time to allow the surplus water to drip off; pour plain alcohol on and off twice and set aside to dry. Do not dry too quickly; if you do it will be too smooth. Let it dry at the natural temperature of the room, and when dry you will find it the most beautiful surface to retouch upon. It is superior to wet plates flowed with gum arabic.

"If other photographers can appreciate this as I do, they will find it a blessing and can remember me in their dreams.

"J. G. S."

Q.—J. H. McG. writes: "I have been trying to make some photo-relief plates by making an emulsion of gelatine with four grains of bichromate of ammonia. These plates were exposed behind a negative and developed in warm water; then a wax cast was made, and from the wax I made a plaster cast, and finally a lead impression from the latter; but I do not get what I want. I would also like to know if the Ives process is a secret; if so, what it costs? and where is it for sale? Or do you know of any other process that you think would do for a man to make a plate once in a while?"

A.—A lead cast from the plaster is not fit for printing; send the cast to a type-founder and he will make you a stereotype plate. All these processes are patented in some form or other, and care must be taken not to infringe the patents. Mr. Ives' address is Fred. E. Ives, care of Crosscup & West Engraving Co., Chestnut street, Philadelphia. You should write him about the process. [Why don't you read the photo journals and keep posted? One of the finest processes is now adopted and commercially used in New York. See BULLETIN, July, 1884.—EDS. OF BULLETIN.]

Q.—H. S. R. says: "I wish to get some information about the process of reproducing by the electro-gelatine process. I am told the gelatine is floated or immersed in bichromate of ammonia solution; it is then dried in a dark room, and printed under a negative, and washed out. Now, all this is simple enough to a fellow that knows all about it; but I find there are several things much mixed with me. I would like to know strength of bichromate solution, and how long to float. How is it dried—artificially, or by ordinary atmospheric heat? Must it be brushed out on a plate of glass, or how? How long must I print? Does washing out mean simply place in clear water, and for how long? Is the impression taken in plaster while wet or dry? Please advise as to cost of publication if information is in print, or put me in the way of finding out."

A.—The bichromate solution is about four per cent. strong. Float two or three minutes, and dry in a dark room at ordinary temperature. Use the ordinary gelatine tissue that is specially prepared for this purpose. Use a sensitometer for printing. Washing out depends on practice and the character of the work you wish to make. See directions that are printed in "Carbon Manual," issued by our publishers; also consult "Mumler's Patent," in American Patent Office.

Q.—W. J. G. writes: "What I want to know is, should a gelatine emulsion be alkaline, acid or neutral, when ready to coat plates?"

A.—The various emulsions are made either acid, alkaline or neutral, according to the formula used. But since they are most thoroughly washed before they are applied to the plates, they should be neutral; if otherwise, it is an indication of careless washing.

Q.—C. B. W. writes: "I have a quantity of new negative collodion, which has evaporated and is very thick. I tried to thin it by adding equal parts of ether and alcohol, and it seemed to work extremely slow. Is there any way by which it can be made thin and sensitive, as when new?"

A.—Try more alcohol and ether; if sufficiently thin, it should work as well as it did originally.

Q.—H. O. J. writes: "Have had a fog in my bath at different times for the past two years, and have tried every remedy. I added acid, and the more I add the worse the fog is. It is not an alkaline fog, but I think it is organic. My last idea is that it is the gutta percha dipper. Please let me know if you ever heard of gutta percha producing fog. If so, what's your advice?"

A.—Your bath probably contains too much organic matter. Make it alkaline, and place in sunlight for some hours; then filter and add C. P. nitric acid carefully. If one such treatment is not sufficient, repeat the operation, and you will probably be all right. Gutta percha does not produce fog.

Q.—W. A. B. writes: "Inform me of the best method of clearing up the color on dry negatives. After they are developed and fixed, they have rather a yellow look, which makes them print quite slow. The color of the negatives should be changed before they are dried."

A.—Soak in a bath of alum 1 ounce, citric acid ½ an ounce, water 20 ounces, until color disappears; then wash thoroughly and dry.

Q.—G. J. S. asks: "Will you please answer the following in the BULLETIN: First, how can an Entrekin Burnisher be heated with coal oil, alcohol is too expensive; second, how are clouds photographed? I have exposed several plates on cloudy days, but clouds never show in the finished negative."

A.—Coal oil can be used on a burnisher; our publishers sell a lamp suited to the purpose that could be safely used. To photograph clouds use the smallest stop of your lens, a slow plate, and quick shutter. Develop for the clouds alone; the rest of the picture will be under-exposed.

Q.—W. C. M. says: "In making a new negative bath recently I got too much acid into it. I them added carbonate of soda until effervescence no longer took place upon addition of more carbonate. I them added its own bulk of rain water and boiled it down to about 2 ounces, there being about two quarts of the solution at first. After adding pure rain water until it reached its original bulk, filtering, and sunning it for two days, I tested it with Pyle's silver test and it indicated not a trace of silver. Thinking the test solution had lost its strength, I made a new one, and again the same result. Is there no silver in it, or what is the difficulty?"

A.—It appears to us that you precipitated all your silver by adding too much carbonate of soda. Use test paper and not work by the effervescence.

Q.—T. A. W. asks: "Will you please inform me what is the cause of my silver solution not working quicker, and what is the remedy?"

A.—You do no say what you use the silver solution for. For negatives it should contain 40 grains of siver nitrate to the ounce. For positives use 50 to 60 grains to the ounce. Read directions in the "Silver Sunbeam," issued by our publishers.

Q.—E. M. C. writes: "I am troubled with blisters on extra brilliant paper; can you tell me how to get rid of them?"

A.—Try the remedy given on page 295 of BULLETIN, May 23. Also read article on same subject in this issue.

Q.—J. E. S. says: "I have a vauable tintype that I should like to have copied. It has the film scratched off in some not very prominent places, and I should like to know what is the best way to fix this. Also, is there any particular camera or lens necessary to make good copies."

A.—Make a negative of the tintype and work out the defects of the original picture upon it by retouching. No particular camera or lens is necessary.

Q.—F. M. H. writes: "Can I use the incandescent electric light in the dark room as a substitute for the Ruby lamp?"

A.—Yes, take care not to use too bright a light and cover carefully with a Ruby glass.

Views Caught with the Drop Shutter.

We have to acknowledge the receipt of an invitation to participate in the excursion of the Eastman College, at Poughkeepsie, on May 22. We regret that the duties of the editorial chair kept us from participating in so enjoyable a trip. The Committee will please accept our best thinks for their kindness.

At Butler's art store there is a show of prize photographs which are the work of local amateurs. It is interesting not only for the excellence of much of the work, but as evincing the greatly increasing use which the public itself is making of the art of getting sun-pictures. It will not be many years before nearly every person in traveling will take along a snug and convenient photographic apparatus, with which to secure a quick and true picture of bits of scenery or particular objects to serve as reminders of his journey, and to be a pleasure always. The first prize was given to Mr. W. H. Simonds, of Warehouse Point; the second to Mr. James B. Cone, of this city. Mrs. J. C. Kinney had some pictures that were remarkably good, and they were made, too, under unfavorable conditions.—*Hartford Daily Times.*

A POPULAR ART GALLERY.

The beautiful art galleries of Messrs. Thomas & Co., at the corner of Market and Broad streets, are fast becoming a fashionable lounging place during the afternoons. A visit to this storehouse of photography will reward all lovers of the beautiful. Photographs of all sorts of people may be found there, from the prominent statesmen to the most humble citizen. A specially interesting picture is that of a colored baby, who is no other than Leon Abbett DeKalb, the Governor's godson. Messrs. Thomas make a specialty of the Rembrandt shadows and cameo types, and they have some magnificent specimens of this style of the photographic art on view.—*Newark Journal.*

Mr. H. Q. Sargent, *President* of the Photographic Merchants' Board of Trade, was suffering at the time of his visit to New York, but he thought it best to come to the annual meeting, and unfortunately the journey added to his trouble. We are now glad to learn that he has recovered from his long siege of sickness, and is again at his desk with H. Q. Sargent & Co.

A. S. Holms, of Albany, N. Y., has bought the Schoonmaker Gallery at Troy, N. Y., and will run both galleries.

Mr. Schoonmaker will retire to look after his real estate.

C. C. Miller, Johnstown, N. Y., has bought Mr. Fell's studio at Herkimer.

R. E. Atkinson, formerly of Troy, N. Y., has opened a fine new studio at Schenectady, N. Y. The studio is fitted up with all the improvements in the art.

Knowlton Bros., Northampton, Mass., have just opened the largest and finest studio in this part of the State. They have refitted up regardless of expense, putting none but the best and latest improvements in all branches. They make a specialty of large pictures, 20x24 contact photographs, which they are making in large numbers. They also have the finest set of views of the city that has been shown. Crayon, water-colors, copies, all sizes, are made at the studio. Messrs. Knowlton Bros. will, no doubt, do a large, profitable trade.

T. J. Arnold, Ballston Spa, N. Y., has just completed his fine new studio, and is now ready for business. His outfit is the best that could be bought. The operating room is a model ; the light is large and in the center of the room, which gives a chance to work both sides.

Mr. Arnold is well known, a fine artist and a gentleman, which is sure to bring success.

We note with pleasure the formation of the *Pittsburgh Amateur Photographers' Society.* The officers are: A. S. Murray, *President ;* J. A. Brashear, *Vice-President ;* W. S.

BELL, *Secretary;* W. E. VON BONHORST, *Treasurer.* They are fitting up rooms at No. 59 Fourth avenue, Pittsburgh, and courtesies are extended to members of similar societies.

THERE is nothing so pleasant in the photographic line as a neat gallery and reception room. A tasteful entrance, with neat surroundings, a tidy and well-arranged reception room, are evidences that similar care will be taken with the pictures produced in the gallery. Such was the impression we obtained in one of the galleries we visited recently, and an examination of the purely photographic work revealed the truth of our first impressions. The pictures produced show thought and care in posing and artistic feeling in the finish.

These thoughts were suggested by a visit to the Gallery of Mr. Duryea, in New York; and the evidences of success which we noted are the best indications that thoughtful and painstaking work in photography, as in everything else, pays as well to-day as ever it did. Mr. Duryea is a recent convert to the dry plate process, and it was especially interesting to note the pleasure that this method affords him in its use.

Photographers' Association of America—Sixth Annual Convention, Buffalo, N. Y.

Arrangements have been made with the Erie Railway Company for excursion tickets from New York to Niagara Falls and return, with privilege of stopping at Buffalo, at the rate of $5 for the round trip. Tickets good for fifteen days. Parties desiring to obtain tickets can do so by applying to

E. & H. T. ANTHONY & Co.,
No. 591 Broadway, N. Y.

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*

ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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PHOTOGRAPHY IN COLOR.

BY PROF. OGDEN N. ROOD,

Columbia College, New York.

MY attention was first called to this subject in 1853. At that time I was an assistant in the "Yale Analytical Laboratory," which afterward developed into the present Sheffield School. The interest of the Professor of Chemistry, John Porter, was excited by some articles on this subject which had recently appeared in France, and he was desirous of making experiments to test an idea that had occurred to himself. The sensitive surface was to be prepared while actually under the influence of colored light, so that from the start the colored rays should be able to act on it and influence the molecular condition of the newly formed combinations. A prismatic spectrum was to be employed, and it was hoped that the red rays would persuade the newly-born silver salts to reflect red light and only red light, while the same salt, when generated under the influence of the green rays, by the aid of this early education was to be made capable hereafter of reflecting green light, but incapable of reflecting red, yellow or blue light. Expressed in the language of the undulatory theory of light, the idea would be about as follows: expose molecules in act of formation to the long waves of red light, and ever after they will be capable of reflecting mainly the long waves or red light; all other kinds they will absorb and convert into heat.

This task having been assigned to me, I entered on it with zeal and arranged a dark room; the solar spectrum was made to fall nicely on the table, and many of the processes known at that time were in succession tested. The photographs of the spectrum thus obtained were not at all uniform in color; sometimes they would be delicately shaded from a dull red-gray to a blue or violet-gray and often they presented minor changes of color variously disposed. Favorable indications were followed up as they presented themselves; but after a time I became convinced that the play of color in the photographs was solely due to the greater or less energetic action of the light upon the sensitive substance, and that exactly the same results could be obtained by using white light, more or less intense. When the work was finished, I presented my written report with the photographs, and the professor, after studying it, came to the same conclusion. The "nascent" idea was not feasible.

And yet photographs in color of colored objects have been obtained.

Upon one occasion, about twenty-five years ago, I obtained a very fine one. The subject was a large elm tree and a red farm house, these two objects filling up almost the whole plate. The ordinary wet collodion process was employed; the negative, after being removed from the hypo, was washed and dried as usual; but when I examined it by reflected light,* it turned out that the green tree was colored dark green just as nicely as if it had been a camera image, and the red house was not a bit behindhand in truth and delicacy of hue. A photograph in colors, sure enough! But an examination with a lens, and a little turning and twisting of the plate, caused the illusion to vanish: the colors were those of "thin plates," soap-bubble colors, caused by the interference of light. Wet collodion often shows them in patches when it is somewhat rotten, and this sample was very rotten. The interference effect had nothing to do with the *color* of the light, but was controlled by its intensity. Once I had a chance to examine some photographs in color of gaily dressed dolls made by Niepce de Saint-Victor, and it seemed to me that the pale colors they presented were produced by a species of interference, acting by means of the presence of *more* or *less* finely divided particles. The details of my examination I do not recollect, but merely the conclusion that the appearances presented were due to causes analogous to those that were effective in the case of my glass negative. Photographs in color, such as they are, can be obtained with sufficient patience; but in order to give this fact the slightest value, it is necessary to prove that a corresponding amount of patience would not be rewarded by the production of colored photographs of objects which were gray, light gray, dark gray, etc. When we think we have made a discovery, our first duty is to destroy it mercilessly if possible, and the reproduction of the same effects with white or gray objects is the proper mode of administering justice in this case. It is barely possible that some one may ask why a process that renders the colors correctly is a failure merely because corresponding colors can be obtained when the natural objects are tinted gray. The question answers itself; white and gray objects will be colored in the photograph, and, worse than that, the same color in the natural object will vary in the photograph with its brightness or luminosity.

Let us now examine this subject from a theoretical point of view and ask ourselves why we should hope that photographs in color could ever be produced. We see the rich red rays of the spectrum falling on the plate, and we imagine that a substance which is sensitive to light will somehow be acted on by them, and arrange itself so that ever afterward it will better be able to reflect red light than any other kind of light. Why? Why should a substance that has been acted on by long waves be better able to reflect long waves than those that are shorter? Why should a sea beach that has been acted on by long waves be on that account better able to reflect and redirect to the ocean long waves rather than mere ripples? The waves of light produce in sensitive substances chemical changes; new compounds are formed; why should the long waves of red light produce compounds that are especially capable of reflecting long waves, or red light? When we undertake to make a photograph in color, in effect we ask one and the same chemical substance to reflect for us long, medium or short waves, red, green or blue light, according as it has been acted on by waves of greater or lesser length. The demand seems to me preposterous.

The hope for photography in color lies in a different and less independent direction. By the use of suitably colored plates of glass placed before the lens of the photographic camera, it is possible to obtain ordinary negatives of the red, yellow and blue constituents of a brightly colored surface—a carpet for example. These can be made to yield red, yellow and blue positives by the aid of the photo-lithographic process; and when these three positive impressions are superimposed on the same sheet of paper, a more or less successful reproduction of the colored object is obtained. The selection of the three transparent pigments used in printing is necessarily left to the taste and judgment of the operator, or I should say artist, as without considerable artistic knowledge the results are not likely to be valuable. It will be seen, then, that in this process photography is really made to act as an aid to chromo-lithography, and the results are really chromo-lithographs, the work being mainly performed by the camera and colored glasses. I do not see why it should not be possible in this way to reproduce more or less successful colored pictures of brightly tinted objects.

When we come to landscape the problem is more difficult, for a large part of its color consists of delicately tinted grays, the handling of which would be, to say the least, very troublesome, and would require far more than the superposition of the three layers of pigment just mentioned. For progress in this direction it would be necessary that the experimenter should, at the same time be a skillful photographer, a good chromo-lithographer and a landscape painter. The results obtained would not be exact representations of natural scenery, but rather sketches in which the artistic taste presided over, modified and massed together natural tints. They would be none the worse for that. Of course there would still remain the difficulties connected with an artistic disposition of light and shade, and the still more insuperable ones of composition; for the disposition of objects in a landscape is rarely just what we want, or even what we are willing to tolerate. On the other hand, there are many simpler objects where this process* would probably succeed very well, such as colored designs of all kinds of decorated objects, and all those cases where the coloring is simple and not too evanescent.

May 4, 1885.

THE CHEMISTRY OF THE NEGATIVE.

When we see the number of different formulas prescribed by the various dry plate manufacturers, we cannot help asking the question, why is there such a variety of ways of doing one and the same thing—the reduction of silver bromide?

Setting aside for the time being the much controverted point as to the action of the luminous rays upon the sensitive silver haloid, it is sufficient for the purpose of discussion that we know that the light confers upon the silver salt the property of becoming reduced by certain chemical agents, which are called deoxidizers. Since, therefore, the end we wish to attain is one of deoxidation, any suitable deoxidizing agent admits of being used. With the gelatine dry plate the agents of this character are now almost universally ferrous oxalate or pyrogallol. With the former of these agents there is found to be very little difference in the formulæ given by the various dry plate manufacturers and others. Among the latest recommendations to be added to the mixture of ferrous sulphate and potassium oxalate is potassium sulphite. This appears to us to be a step in the right direction. We have seen hyposulphite and sulphite of soda both recommended to be used in the ferrous oxalate developer, but they are both objectionable. In the case of the hyposulphite, there are two reasons why it should not be used. In the first place, the addition of hyposulphite to any acid solution causes the precipitation of finely divided sulphur, which is very difficult to filter out; and, secondly, the addition of any soda salt to a solution of an oxalate will cause the formation of the difficultly soluble oxalate of soda, unless the solution is a very weak one. The last statement is equally true when sodium sulphite is used. Potassium sulphite, on the other hand, presents no difficulties, as the corresponding oxalate is very soluble. The reason for adding these salts to the ferrous oxalate is to keep the iron in the most efficient condition for deoxidizing; and, apparently, as long as the sulphite is present the iron remains in the ferrous state, while the formation of ferric oxalate is entirely prevented. This insures the absence of the brick-red powder which forms when the solution is at nearly its strongest condition, and owing to the tenacity with which it sticks to the gelatine film ruins many negatives for the beginner in dry plate photography.

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* Due originally to C. Cross and Ducos du Hauron, and improved by Albert of Munich and Bierstadt of New York.

Owing to the simplicity of the materials used, and the well-known character of their action, few modifications of the ferrous oxalate formula are admissible; but with pyrogallol the case is entirely different. Here we have an organic body in which, while it is well known to be a deoxidizing agent, the products of its action are complicated substances and very little understood. Whenever we have an action of this kind, and no systematic researches are made to discover the nature of the products, there is always a tendency among those with the least knowledge of the subject to attribute all kinds of virtues to substances of little value and often of a pernicious character. Now, from the use of a great variety of developers made with pyrogallol, we are convinced that the simplest formula is the best. All that is necessary to attain the desired end is a solution of pyrogallol in water, with an alkali to give the conditions for deoxidation, and some soluble bromide to act as a restrainer. With regard to the character of the solution of pyrogallol, in order to keep it, all that is necessary is to make the liquid faintly acid with sulphuric acid. We have a solution made this way six months ago, which is almost colorless, and works well to-day. The alkali used depends greatly upon the manner of working and the fancy of the operator; potassium carbonate, sodium carbonate and ammonia working equally well in our hands. We prefer soda because it is readily obtained in a pure state and is less expensive than potassium carbonate. We dislike ammonia because of the irritating effect of the fumes upon the eyes.

The addition of sulphite of soda to the developer may do some good in keeping the pyrogallol from oxidizing; but the addition of such enormous quantities is entirely without reason, and is utterly wasteful. Twice the weight of the pyrogallol used is all the sulphite that is necessary, and we know of many formulas where from fifteen to twenty times this quantity is recommended.

In many cases the formula directs that the bromide be placed in the solution with the pyrogallol and the whole solution made acid. We think this is entirely wrong. The effect of the acid is to set free hydrobromic acid in the fluid, which is very likely to act upon the pyrogallol and give complicated organic bodies whose action is unknown and may be very harmful to the development of the photographic image.

Glycerine added to the developer is sure to soften the film; while it is difficult to keep it from frilling without this addition, especially in warm weather.

Nitric acid is sometimes recommended to be used in the pyrogallol solution. For what purpose we are at a loss to understand, since it can only oxidize the pyrogallol and render so much of it inert.

Salicylic acid is found in some formulas for the pyrogallol solution. We doubt its utility and some of our friends have pronounced it harmful.

Alcohol and methylated spirit are sometimes used as solvents for the pyrogallol. Great caution should be used in making solutions with these, to see that they are free from fusel oil and resinous matters. The methylated spirit is usually entirely unfit for use in a formula for a developer. Anyhow, they are both unnecessary.

The latest addition to the developer which we have noticed is calcium chloride. This addition is entirely contrary to the ideas of Dr. Eder, who distinctly states in a recent formula that the developer should be free from chlorides.

We have thus commented upon the various ingredients of the developer, and give the results of our experience upon quite a variety of brands of plates. Our cleanest work has been done with the pyrogallol solution weakly acid to keep it, and for alkali, carbonate of soda with a little sulphite of soda. Of course, a soluble bromide is needed sometimes as a restrainer.

Having developed the picture, the next step is generally to place the well-rinsed plate into an alum solution for a few minutes. This is sometimes omitted, but our experience is that the procedure is a good one, and takes out any stains left by the pyrogallol. But a word of caution is very necessary right here. After taking from the alum solution, wash the plate very thoroughly for some minutes in a good stream of water. This is particularly necessary, because if any alum solution is left in the film and the plate is put in the hyposulphite solution, a precipitation of sulphur in the gelatine surface is sure to occur. We recently saw some plates condemned that had received just such treatment—a careless washing between the alum and the hypo. These presented a granular surface and contained the sulphur precipitated in the film.

We are satisfied that a little more careful study of the chemical principles involved in the production of the negative will tend to a greater simplicity in formulas, and less complaints about bad plates. If our remarks call attention to the necessity for study in this direction, we shall be amply repaid for the time we have devoted to the subject.

◆ ◆

[*From Photographic News.*]

PHENYL-HYDRAZINE—A NEW DEVELOPER.

BY DR. J. MARIA EDER.

THE hydrazines possess powerfully reducing properties, and reduce in the cold solutions of silver, gold, platinum and mercury salts; even alkaline copper solution is reduced.

I have made experiments specially with the hydrochlorate of phenyl-hydrazine, the compound having been obtained through Dr. Walter, of Basle. This salt forms white crystalline leaflets, which are permanent in the air, easily soluble in alcohol and sparingly soluble in water. The aqueous solution reduces silver nitrate, but not silver bromide or chloride.

If the hydrochlorate of phenyl-hydrazine is mixed with an alkali, the base (hydrazine) is set at liberty, and this base is, to some extent, soluble in water. The mixture, with caustic potash, is a very powerful developer for gelatino-chloride and for Wellington's gelatino-chlorobromide, there being no tendency to fog. On silver bromide its action is less energetic. The color of the image obtained is generally yellowish brown, but under other conditions it is grayish black.

The phenyl-hydrazine developer remains colorless for a long time, but in the end it becomes yellowish and acquires the smell of tar products.

One cannot at the present moment form an opinion as to whether the new developer possesses any practical value, but I will give a few details as to chemical constitution and preparation of the hydrazines.

The hydrazines contain the group N_2H_3 or $NH—NH_2$, and they are formed (*a*) by the reduction of nitrosoamines with zinc and acetic acid; (*b*) by the reduction of diazo compounds with sodium sulphite; (*c*) by reduction of diazo-amido compounds with zinc and acetic acid.

The hydrochlorate of phenyl-hydrazine is prepared as follows: Twenty parts of aniline are dissolved in 50 parts of hydrochloric acid (*s. g.* 1.19) and 80 parts of water; this solution being then treated in the cold with the calculated quantity of sodium nitrite (this salt being dissolved in double its weight of water and slightly acidulated with hydrochloric acid). The mixed solution is now slowly poured into excess of an ice-cold and saturated solution of sodium sulphite, and as soon as a sample of the crystals which separate redissolves in the mother liquor without evolving gas on the application of heat, the next stage is reached. The whole is now heated cautiously on the water bath, and when the greater part of the separated salt has dissolved the liquor is neutralized with hydrochloric acid. It is next acidified with acetic acid, and while warm is treated with zinc dust until it is decolorized. After this it is filtered, heated to boiling, and one-third of its volume of strong hydrochloric acid is added. The hydrochlorate of hydrazine now separates in crystals.

Phenyl-hydrazine has the composition $C_6H_5—NH—NH_2$, and the hydrochlorate contains $C_6H_5—N_2H_3—HCl$.

[*From British Journal of Photography.*]

CLEARING SOLUTIONS FOR NEGATIVES OR DEVELOPED PRINTS.

It rarely happens that a developed image, whether on glass or paper, is found to be perfectly free from stain or discoloration in the parts where no deposit exists, especially when pyro has been the developing agent employed. In the case of developed prints the importance of freedom from any slightest trace of developing stain is far greater than when negatives are in question; for so far as the latter are concerned, little trouble is experienced beyond a prolongation of the time occupied in printing, whereas in the former instance the entire beauty of the picture depends upon the purity of its whites.

For ordinary negative purposes the bath of alum and citric or hydrochloric acid answers most requirements, and is now in very general use. This is employed after the operations of fixing and washing have been performed, and before the negative has been allowed to dry. Its application may be made with equal effect previous to fixation, so far as the removal of the developing stain is concerned, and it then has the additional advantage that it aids in the elimination of the last traces of discolored solution from the film and entirely arrests further developing action. But in this case, if the clearing solution itself be not thoroughly removed by washing—and there is a strong tendency to shirk the washing somewhat at this stage—there will be a strong tendency toward the deposition of sulphur in the film from decomposition of the fixing bath, and this sulphur deposit, once formed, is extremely difficult, if not impossible, of removal.

When prints are in question, or even paper negatives (which latter are coming into vogue), the importance of this early application of the clearing solution previous to fixing is greatly increased, while, at the same time, the danger arising from the possible precipitation of sulphur is considerably enhanced, owing to the absorbent nature of the paper and the tenacity with which it clings to the solutions which are allowed to penetrate into its pores. Obviously any deposition of sulphur would militate powerfully against the beauty of the resultant prints, if, indeed, the additional danger of progressive sulphuration and consequent destruction of the image do not render it more to be feared than pyro stain. The value of a clearing solution capable of use before fixing, and without any tendency to interfere with the fixing bath, will therefore be recognized.

In the course of recent experiments with sulphurous and hyposulphurous acids in the preservation of pyro, it struck us to attempt to utilize the bleaching or decolorizing action of these substances in place of the ordinary alum and acid bath generally employed; and upon putting the matter to the test, we found our expectations more than realized. Not only was the pyro stain readily removed, but negatives which had been passed through the ordinary acid bath were still further improved by the application of the new clearing solutions; thus showing that these latter act far more powerfully. The increased decolorizing power does not appear to be accompanied by any injurious action upon the photographic image; that a certain amount of lowering of the density occurs is true, but this is due solely to the removal of the stain, and not to any action upon the image itself, and is indeed similar in character to the reduction that occurs with alum and citric acid.

But the chief gain in the employment of the new solutions is to be found in the fact that they appear to exercise not the slightest effect upon the hypo bath, for plates may be removed from the clearing solution, and after the most superficial rinse in water, plunged direct into the hypo without evil effect. Developed prints removed in this manner direct from the clearing to the fixing solution, or *vice versa*, exhibit not the faintest trace of yellowness, but on the contrary, if left in the clearing solution sufficiently long, show a purity in the lights that cannot be obtained in any other manner. Besides this, if left far longer than is necessary, no appreciable reducing action takes place, the image retaining all its pristine force.

With a few words as to the solutions employed, we shall close the present article. Plain solution of sulphurous oxide in very dilute form may be employed, but as it is difficult to procure in out-of-the-way places, and even more difficult to keep, besides being very expensive in proportion to the acid it contains, we do not recommend it. It is better to use a saturated solution of sulphite of soda, or of potash, and when required for use, to add a few minims of hydrochloric acid, so as to liberate an equivalent of sulphurous oxide. The chloride of sodium or potassium formed will prove beneficial rather than otherwise, and the same solution can be employed until it refuses to liberate any more SO_2. Better still in consequence of the larger proportion of sulphurous acid they contain are the bisulphites, which may, indeed, be employed alone by virtue of the free acid they contain.

Still another solution consists of the compound formed by treating bisulphites with zinc. This is even more energetic, and but for the slight amount of extra trouble involved will no doubt be preferred by many.

The solutions need not necessarily be used at saturation point, but may be diluted to any convenient extent for the sake of economy. A saturated solution diluted with from twice to four times its volume of water, and acidified at the time of using, may be poured on and off the plate and thrown away when it has served its purpose. In this manner the discoloration of the bulk of solution that occurs when several plates are soaked successively is avoided. When it is considered desirable to employ the alum bath, a saturated soluution of that salt, or the ordinary alum and citric acid mixture, may be substituted for a portion of the water used in diluting.

SUMMER SCHOOL OF AMATEUR PHOTOGRAPHY.

We are pleased to announce that our friend, Prof. Charles F. Himes, Ph. D., of Dickinson College, has taken charge of the Summer School of Amateur Photography at Mountain Lake Park, in Garrett County, Md., from July 22 to August 5. The study of photography amid the beauties of such a delightful spot must indeed be an unusual pleasure, and the advantage of having a gentleman of Dr. Himes' reputation and abilities to direct the progress of the amateur should induce a large number to attend this interesting school of instruction.

POSTAL PHOTOGRAPHIC CLUB.

The first album of this club has made its rounds among the members. There were nineteen prints contributed, showing a large variety of subjects, from the quiet interior to the instantaneous exposure on a train going at forty miles an hour. In accordance with the rules, two prizes have been awarded, in this instance both going to the same member. The successful prints have been No. 10, "Red Creek Bridge, near Rochester, N. Y.," by Mr. John E. Dumont, and No. 16, "Old Wheel, near Rochester," by Mr. John E. Dumont.

Several circumstances have delayed the second album, which should have started last month, but it is expected that by the 28th of this month it will be on its rounds.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

To the Editors of the Bulletin:

The arrangements for our Sixth Annual Convention and Exhibition, to be held at the New State Arsenal, Buffalo, July 14 to 18, are now complete. There will be good light and ample room for all. We have been successful in procuring practical papers, and several subjects of great interest will be discussed. I can safely say that the building in which our Convention will be held is the largest and best adapted for the purpose of any we have ever had. The spaces for exhibition have been liberally taken, and the photographer will see such a display of photographic apparatus and novelties as he has never seen before in one collection; besides, the specimens of photographic work of this country and from Europe will be most interesting. Some of the European exhibits have arrived, and are pronounced very fine. Great efforts have been made for this convention and the success of our Association depends upon it. Therefore, let all decide at once to go to Buffalo. Round-trip tickets at reduced rates can be had on all the different lines, by presenting photographers' certificates, which can be obtained from any stock dealer throughout the country. The hotels have reduced their rates.

Fraternally, J. LANDY.

To the Editors of the BULLETIN:

I begin to realize that the Sixth Annual Convention of the Photographers' Association of America is near at hand. Our house is in order and lamps trimmed and burning, as will be seen by the following programme, list of exhibitions and diagram showing the amount of exhibits of photographic requisites.

H. MCMICHAEL, *Secretary.*

PROGRAMME.

SIXTH ANNUAL CONVENTION, JULY 14 TO 18, INCLUSIVE.

To be held in New State Arsenal, Buffalo, N. Y.

TUESDAY, JULY 14.

Morning Session, 10 o'clock:

Address of Welcome, by *Secretary* MCMICHAEL.

Address and Opening of the Convention, by the *President.*

Roll Call of Members.

Report of Standing Committees, consisting of Chairman of Executive Committee, by W. A. ARMSTRONG, and Progress of Photography, by C. GENTILE.

Appointing Committees to nominate Officers and to select Location for next Convention.

Miscellaneous Business.

Annual Report of the President, consisting of a Review of the Progress, Needs and Benefits of Photography.

Afternoon Session, 2 o'clock:

Paper by E. L. WILSON, Philadelphia, Pa.: "The Dignity of Photographic Art."

Discussion: "The Deterioration of Gelatine Dry Plates."

Paper by J. F. RYDER, Cleveland, Ohio: "How to See."

Discussion: "The Best Method of Lighting the Dark Room."

Paper by J. L. HURD, Providence, R. I.: "Photographic Portraits *vs.* Camera Pictures."

Paper by J. BURTON: "Development."

WEDNESDAY, JULY 15.

Morning Session, 10 o'clock:

Business Meeting.

Reports of Committees: Nominating and Locating.

New Business.

Excursion to Niagara Falls, 2 o'clock.

THURSDAY, JULY 16.

Morning Session, 10 o'clock:

Business Meeting.

Reports of Committees.

New Business.

Afternoon Session, 2 o'clock:

Lecture by Dr. GARRISON, Chicago: "Dry Plates."

Paper by W. H. POTTER, Indianapolis, Ind.: "Handling and Developing Dry Plates."

Opening of Question Box.

Paper by J. TRAILL TAYLOR, New York: "Certain Defects Incident to the Construction and Use of Combination Lenses."

Paper by W. A. Armstrong, Milwaukee, Wis.: "Our Mistakes; let us Correct them."

Paper by Col. Stuart Wortley, England.

Friday, July 17.

Morning Session, 10 o'clock:

Business Meeting.

Reports of Committees.

Election of Officers.

Selection of Location for next Convention.

Afternoon Session, 2 o'clock:

Paper by J. Landy, Cincinnati, Ohio: "Prices."

Paper by J. Robinson, Tunbridge, England.

Paper by G. M. Carlisle, Providence. R. I.: "Backgrounds, their Use and Abuse."

Paper by W. M. Ashman: "Portable Support for Washing Plates."

Discussion of Prices.

Paper by G. A. Douglass, Chicago.

Saturday, July 18.

Morning Session, 10 o'clock:

Unfinished Business.

Closing Ceremonies,

PHOTO EXHIBIT FOR CONVENTION.

Mr. Winters, Syracuse, N. Y., 200 sq. ft.
Frank Robbins, Oil City, Pa., 150 "
Mr. Clark, Indianapolis, Ind., 100 "
Mr. Potter, " " 100 "
W. A. Armstrong, Milw'k'e, Wis., 150 "

David Samult, Philadelphia, Pa., large collection of porcelains finished in oil.

A. G. Marshall, Canandaigua, N. Y., 50 square feet.

H. F. Nelson & Co., twenty-five (16 x 19) views of Niagara Falls.

G. A. Douglass, Chicago, Ill., large collection of photos.

J. F. Ryder, Cleveland, O., large collection of photos.

S. Wardlaw, Rochester, N. Y., 200 square feet.

Geo. Baker, views of Niagara Falls; wants 360 square feet.

Sarony, New York, large collection of his celebrated studies.

J. Landy, Cincinnati, large collection.

G. Cramer, St. Louis, 700 square feet.

Gurin, St. Louis, 360 square feet.

Pearsall, Brooklyn, N. Y., large collection.

Kent, Rochester, N. Y., large collection.

H. McMichael, Buffalo, N. Y., 400 square feet.

Sholton, St. Louis, 360 square feet.

Benecke, St. Louis, 360 square feet.

Nier & Wettlin, Rochester, five life-size heads.

Large collection from France.

Secretary H. McMichael has just received word from Germany that the following exhibits are promised for the coming Photographic Convention from the following firms:

I.—Franz Hanfstangl, Munich.

Kunstanstalt and pigment papier fabrik.

One fac-simile fabrik Klosterhecht.

One imperial fabrik Prosit.

Ten portraits, all made in carbon prints.

II.—Th. Creifelds, Cologne.

Photographische and Lichtdruck Anstalt.

Five large size photographs, silver prints, negatives made on gelatine dry plates.

Five boudoirs, Lichtdruck process negatives, made on Fanen collodion dry plates.

III.—Paul Schmidt, Frankfurt.

Four 18 x 22 figures.

One 18 x 22 large head.

One group large Tyrolen Kirmess (own composition).

Four boudoir pictures.

Ten cabinets.

IV.—P. Müller, Munich.

One lot of pictures (not specified).

Philadelphia, June 18, 1885.

We have secured reduced rates for the fraternity to Buffalo, Niagara Falls and return, via "the beautiful Lehigh Valley route." Through express trains leave Ninth and Green streets, Philadelphia, at 9 A. M. and 8 P. M. Round-trip tickets from Philadelphia, $9.00 only. Tickets good for 15 days (July 10 to 25, inclusive).

Orders for tickets on the Lehigh Valley Railroad Company, 836 Chestnut street, Philadelphia, at these special low figures can only be secured by applying to us personally or by letter.

Buchanan, Smedley & Bromley,
No. 25 North Seventh street.

We are glad to note that quite a number of inquiries have come to hand about the prizes offered by our publishers, showing that this will be an interesting feature of the convention.

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OUR PUBLISHERS' EXHIBIT AT BUFFALO.

From the efforts we have observed lately, our publishers intend to do their best to make the exhibition at Buffalo as interesting as possible. They will exhibit many novelties in apparatus, the results of many experiments and inventions during the past year. They will be fully represented and very much pleased to see all their friends at their headquarters just to the right of the Broadway entrance to the State Arsenal. Col. V. M. Wilcox, Mr. Geo. Ayres and other well-known gentlemen will be there to show all the latest novelties in apparatus and specimens of the latest achievements in the photographic art.

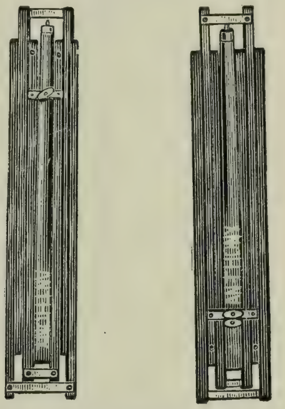
In the absence of Prof. Chandler, who is unable to attend, the Bulletin will be represented by Dr. Arthur H. Elliott, who will be pleased to see all interested in the science and art of photography, and his fellow workers, the contributors and correspondents of the journal.

◆

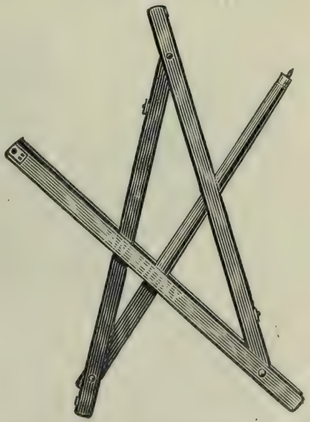
SOME NEW APPARATUS.

Our publishers have recently introduced some new pieces of apparatus, the merits of which may be interesting to our readers.

To begin with, the necessity for a lighter tripod has long been obvious to every user of this indispensable part of an out-door outfit. When tripods were first made for amateurs, they were patterned after the solid heavy stands used in the studios, and were consequently exceedingly clumsy. As the amateur increased his knowledge of the purely chemical part of his work, he began to direct his attention to the construction and adaptability of the apparatus supplied to him. One of the first things that troubled him was this question of the form and weight of the tripod. True to their own interests, the demand for light work was soon satisfied by the supply of the manufacturer, and our publishers have not been behind in this direction. The new "Fairy" tripod (of which we give cuts showing its form and method of use) is constructed on a very simple principle, which, while

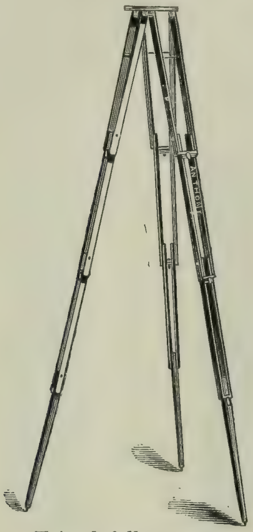


Tripod folded showing opposite sides.



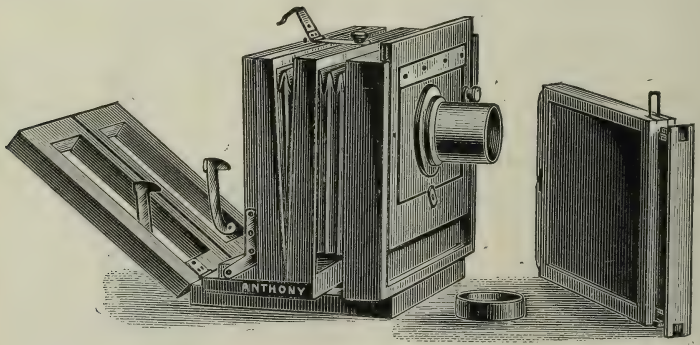
One limb of Tripod partly unfolded.

insuring great lightness, is remarkably rigid. It is constructed of light strips of ash, with brass mountings, and occupies a very small space when folded.



Tripod fully set up.

Some of our lady friends are very much pleased with it and say "it is as light as a feather, and takes up no more space than a music roll." It is certainly the lightest tripod we have seen, and the fact that it will carry an 8 by 10 camera with steadiness shows its great firmness. We have ourselves used a $6\frac{1}{2}$ by $8\frac{1}{2}$ camera upon this tripod with perfect satisfaction.



As the more experienced amateur has become fastidious about the form and quality of his apparatus, the tyro also has imbibed some of his ideas, and looks around to get his money's worth in the cheaper apparatus that he usually starts with in photography. The somewhat rough and clumsy cameras of a few years ago have been replaced by the manufacturers with those whose neatness and finish of construction make us wonder how they afford to give such good work for the money. Among the latest and best additions to this class of apparatus are the new amateur outfits made by our publishers, and of which we give an illustration. In these outfits some of the latest and neatest improvements have been adopted. To satisfy ourselves of the merits of these new cameras, we recently took one out, and after using it, are perfectly satisfied that it is in every way what it is represented to be. The camera box can be used either vertical or horizontal; the lens front rises and falls, the ground glass is fixed to a swing back, and the folding bed is made rigid by the very simple but most effective method of hooks, adopted from the Fairy camera. Altogether we must congratulate the beginner in amateur photography on being able to purchase such a good outfit.

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All communications for the columns of the Bulletin *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

LARGE NOVEL HOLDERS.

SINGLE VS. DOUBLE.

To the Editors of the BULLETIN :

HAVING received many inquiries as to "why the Novel Cameras above 8 x 10 are all fitted with single holders?" "what will double holders cost?" etc., I make the following reply, which, I trust, will serve as an answer to the many:

The Novel Holders, 10 x 12 and larger, have two slides each—one of which is used in the side of the holder, and the other in the end. This is done to enable the operator to draw the slide from the side, whether making the picture horizontal or perpendicular. Any one who has used large view cameras in the field will at once see the advantage of this. If six holders are to be used they can all be fitted with the long slide (*i. e.*, the one that goes in the end of the holder), and only one of the side slides carried. If it is desired to have all the views upright, the one side slide can be used for all six holders by merely placing the holder against the body of the camera (which serves as a dark room), withdrawing the long slide, and replacing with the side slide. After the exposure has been made, reverse the operation and it leaves the extra slide at liberty to be used for the next holder desired. Thus it actually amounts to reversing the plate, out of doors, without tent or dark room, and at the same time using a holder of the same shape as the plate and light as is consistent.

If the holders were double it would complicate the operation, as both sides would have to be changed to use only one of the plates.

The holders are kept in position, at the base of the camera, by springs, and these are adjusted to suit both the holders and ground glass frame.

If the holders were double, they would necessarily be thicker, and the ground glass frame would be correspondingly thick, rendering it heavier and clumsier.

Any view photographer well knows that every ounce additional weight placed upon the tripod will increase the tendency to vibrate or tremble in the wind.

Hence, it is better to use a light holder containing one glass plate than to weight your tripod with twice the necessary amount.

Therefore, all Novel Holders larger than 8 x 10 are made single, not only on account of our own reasoning, but by the advice of some of our finest professional view photographers.

In the first advertisements of the Novel Cameras we quoted the double holders for all sizes, but, finding the single ones far better for all above 8 x 10, we concluded to make them all single, and at just one-half the price we had put on the double holders.

Should any of our friends desire to purchase two single holders, and hinge them together, producing a double holder, we shall not object.

Very respectfully, E. B. BARKER.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

MINUTES of the stated meeting held Wednesday evening, June 3, 1885, the *President*, Mr. JOSEPH W. BATES, in the chair.

The minutes of the last meeting having been approved, the Secretary reported a donation to the library by Mr. Victor Guillou consisting of five volumes of Snelling's Photographic and Fine Arts Journal, dated 1854 to 1858, inclusive; also volumes 1 and 2 of the Philadelphia Photographer, and a copy of "Leaf Prints," by Chas. F. Himes, Ph. D. These books had been the property of Mr. Constant Guillou, the first president of the Society, which gave them an especial value to this organization. On motion a vote of thanks was tendered Mr. Guillou for the donation.

The Excursion Committee reported that the trip to Taughannock Falls had been made by a party consisting of Messrs. Jos. W. Bates, Frederic Graff, F. I. Fassitt, S. Fisher Corlies, Samuel Sartain, W. D. H. Wilson, Frank Bement, Frank G. Rogers, W. L. Springs and Charles Barrington, members of the Society, and Messrs. John L. Keen and Paul Sartain, visitors. They started Thursday A. M., May 21, from Ninth and Green streets depot, in a special car, arriving at the Falls after a pleasant ride of 10 hours at 7 P. M. Their accomodations were very comfortable.

In addition to Taughannock Falls they visited Enfield and Glenwood Falls, Ithaca Gorge Falls, and the grounds of Cornell University. The trip lasted one week, and the results were entirely satisfactory. Seven hundred and seven plates were exposed, varying in size from one-quarter size to whole plate.

The Exhibition Committee reported favorable progress. A large number of circulars had been distributed among societies and individuals likely to be interested, both in this country and in England, and a number of responses had been received, indicating that large and interesting exhibits would be sent from other societies.

The Presentation Print Committee reported that they had selected from the pictures entered in competition for the Presentation Prints for 1875 a view, "Near Seal Harbor, Mount Desert," by Robert S. Redfield, and a figure composition, entitled "Crossing the Brook," by Mr. Frank G. Cauffman.

The Committee on Membership reported the election of active members as follows: Dr. George A. Piersol, Dr. John G. Lee, and Messrs. Charles L. Royce and Horace P. Gillingham.

Mr. Walmsley showed an "Instantograph Shutter" arranged with a pneumatic trigger, and the speed regulated with a coiled watch spring, the tension of which could be readily adjusted for different rapidities.

Adjourned.

ROBERT S. REDFIELD.
Secretary.

June 9, 1885.

GENTLEMEN—You can keep the trifle due me. I have had the value of my money out of the BULLETIN, year-book, etc. I am well pleased with them.

Yours,
A. M. WAY.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

PHOTOMICROGRAPHY BY LAMP-LIGHT.

BY W. H. WALMSLEY.

(Continued.)

PROBABLY the most convenient and generally useful form is one with bellows extending some thirty inches, and capable of carrying both quarter and half-sized plates horizontally or vertically. My box is a square one, carrying plates from the 4-4 size ($6\frac{1}{2} \times 8\frac{1}{2}$) down to $3\frac{1}{4} \times 4\frac{1}{4}$. The bellows are in three divisions, extending fully four feet, giving altogether nearly six feet from the microscope stage to the focusing screen when fully drawn out. It is very carefully made of hard wood, and the framework carrying the bellows moves with the utmost smoothness upon its triangular ways. A short cone front receives the microscope tube, and all extraneous light is shut out by a wrapping of black velveteen around the opening, secured by a rubber band. The focusing screen (which is only used for arranging the object in the center of the field or plate, and is entirely removable) has a space of the precise size and shape of a lantern slide penciled in its center, as a guide to the making of $\frac{1}{4}$-plate negatives. An object filling this space on the ground glass will necessarily occupy the same position on the quarter plate when the holder containing the latter is made to take the place of the focusing screen.

The arranging of the object in the center of the field (under a low power) and the coarse adjustment of focus are done with the bellows tightly closed, which brings the focusing screen so near to the microscope that, while the operator sees the object thereon, his hand can readily reach the milled heads controlling the stage and other movements. But when the bellows are extended to the length affording the desired magnification, it will be found that the object, while retaining its central position, has lost in sharpness, necessitating a final and careful focusing, which is no longer possible in the same manner as before, since the ground glass and microscope are so widely separated that the one cannot be reached while looking into the other. Some special device becomes necessary in this emergency, and many have been made, mostly complicated and costly. The method I have adopted is the old and simple one of a fine cord passing around the periphery of the milled head controlling the fine adjustment, in a groove cut for that purpose; thence through a series of screw-eyes to the rear of the framework, carrying the bellows extension, where it is kept taut by a couple of small leaden weights. The slightest extension upon this cord causes a corresponding movement of the fine adjustment, and nothing can exceed the delicacy of its working or its freedom from derangement. A fine fishing cord makes an admirable cord for this purpose.

As stated, the ground glass is used only for centering the object in the field, and for coarse adjustment of focus. It is impossible to grind it finely enough to accurately focus any delicate tissue with high or even moderate power. Many suggestions have been made and devices used, but all I have tried proved unsatisfactory until the following appeared in an English journal:

"An evenly coated gelatine plate is to be exposed to a flash of white light, developed to a very slight intensity—a mere smokiness—fixed and washed as usual, then bleached with mercury, washed and dried. The result is the most perfect focusing surface imaginable. To use: Remove the focusing glass from the camera, and replace it with the plate-holder from which the slide and back have been removed. The bleached gelatine plate (which, of course, must be of proper size to fit holder) is to be placed therein with the film side toward the microscope. Now place a focusing lens against the back of the plate, apply the eye to it, and adjust the focus by a delicate pull upon the cord. Nothing can be more satisfactory. When the proper adjustment is determined upon, secure it from possible change during the exposure, by winding the cord once or twice over the screw-eye at the rear of the camera frame."

The plate holder, single, opens at the back to receive the plate, and being square like the camera box, admits of the negative being taken vertically or horizontally as may be desired, a matter of no small importance in many cases. This feature, in connection with the revolution of the stage, enables one to place any object upon the plate in the best position for printing. The full size of the plate carried by my holder is 6½x8½, but by the employment of rabbet kits plates 5½x7, 4¼x5½, and 3¼x4¼ can be used. It is desirable to have two or three additional holders as time savers.

For our work to possess any real uniformity or value it is absolutely necessary that the magnifying power used with each exposure should be ascertained and noted. To make the necessary measurements each time would be a waste of that precious commodity, to avoid which I have adopted the following device:

The bed or framework upon which the bellows extends is divided into spaces of one inch, and the same plainly marked thereon. Suppose this extension is thirty inches, and that by means of the stage micrometer we find the 1½-inch objective to magnify twenty diameters with the bellows closed, and fifty, fully extended. This gives the value of one diameter to each inch of bellows extension, and if our magnified objects reach the desired dimensions, at say twenty inches extension, we at once know the power to be forty diameters. Suppose, again, a power of one-fifth is being used, magnifying 125 diameters with bellows closed and 275 with same extended thirty inches. This gives a ratio of five diameters to each inch, and if the desired size is reached at twenty-five inches of extension we have a power employed of 250 diameters. By making these two measurements (closed and open) for each objective habitually used, and recording the same in our notebook, we have an accurate and readily adjustable table of measurements ready for all future work.

We now pass (thirdly) to the important subject of illumination, in many respects the most important in photo-micrographic work. It goes without saying that to the favored few whose time and means permit the harnessing of the sun's rays in their service, no artificial light can be produced which will quite take the place of the great luminary; but for the many, some other means must be sought.

When the promised days arrive that are to place in every man's house electric lights, cheaper than gas and as easily controlled, the problem will be satisfactorily solved; but at present we must content ourselves with prosaic paraffine (or kerosene), seeking only for the most practical method of utilizing its brilliant light.

After many experiments I have settled upon a flat, broad-based lamp of good oil-holding capacity, which is attached to a heavy retort stand with movable arm, enabling it to be carried at any desired height. A duplex burner and tall chimney producing perfect combustion afford a light of thirty candle power, rendering possible the following *average* exposure with the plates I am now using, the variations in time being caused by differing densities and actinism of the tissues or substance to be photographed :

1½ inch	3 to 45	seconds.
⅔ "	7 to 90	"
4/10 "	½ to 3	minutes.
⅕ "	2 to 7	"
1/10 "	4 to 10	"

This lamp produces sufficient light for use with the highest powers, while the lower ones require the employment of a diaphragm to reduce its intensity. Too brilliant an illumination, flooding the field with diffused rays, will almost certainly produce a blurred and indistinct image.

Microscope, camera and lamps being now ready for use, it becomes necessary to provide a suitable support for each, in order to form a complete working outfit. Some writers have described and illustrated their apparatus as being carried upon two or more separate tables or trestles. This I have found to be a most objectionable method in our city houses, since the vibration produced by passing vehicles is unevenly communicated to camera and microscope, producing inevitably a distended or blown image, especially when high powers are being employed. By adopting, however, a long, solid platform, carrying at once all of the separate parts of the apparatus, this objectionable feature is removed, any vibration is communicated to camera and microscope alike, and there is no blurring of the resulting image whatever. In my apparatus this platform is about five feet in length, with a raised portion at one end, upon which the camera is firmly clamped by a milled head operated from beneath. The cone front extends toward the platform upon which the microscope (inclined horizontally) is secured at such a height that its tube precisely enters the middle of the cone. Thus a straight line, drawn from the object upon the stage through the microscope tube and lenses, should fall upon the focusing screen in the center of the latter ; and if all the parts are properly put together this will be the result, and the whole field will be equally illuminated when the lamp is placed in position. The stand of the latter is not secured to the platform, but is left free to be moved about and placed nearer to or farther from the microscope, as may be found necessary to secure the best results. A bull's-eye condenser, upon marble stand placed between the lamp and stage of the microscope, is necessary to concentrate the light upon the object or the achromatic condenser, when the latter is used, and to aid in the equal illumination of the field. The latter is of great importance, since the result of an uneven illumination will be a negative of differing densities in different parts, marring its beauty and at times rendering it utterly worthless. Too much stress cannot be placed upon the necessity of securing an even, brilliant light of proper intensity for the object under examination.

Having sketched the various portions of the apparatus, and brought the whole together in its complete form, a few random extracts from my note-book may not prove uninteresting or valueless to some who are working in this direction.

GELATINE PLATES.—For photo-micrography, the requisites of a perfect plate are great sensitiveness, combined with extreme latitude in time of exposure, and density of development. It should be of a fine texture, showing clearly the most delicate lines and markings, evenly coated and free from spots or blemishes of any sort. It is most provoking to have an otherwise perfect negative marred or ruined by opaque or transparent spots appearing in its most important portions. While several brands of commercial plates answer these requirements in a satisfactory manner, I have found none so entirely satisfactory as Richardson's "Diamond" brand, which, at their best, are simply perfect, leaving absolutely nothing to be desired.

DEVELOPMENT.—Ferrous oxalate, or alkaline pyro, are equally useful, and either may be employed, as suits the fancy or convenience of the operator. My own preference is for the latter, and I always use it with ammonia, well restrained, having had no success with either soda or potash in this class of work. For all objects possessing much color, it is best to continue the development until full density is obtained ; but for very thin or transparent objects, such as diatoms, or unstained vegetable tissues, it is far better to stop the development as soon as all details are out, and resort to after intensification ; for which purpose, bleaching with mercury, followed by a ten-per cent. bath of sulphite of soda, will be found eminently satisfactory. I always use the alum bath, and invariably secure a clean negative of a cool gray color, resembling iron development.

PRINTING.—The best ready-sensitized paper can be depended upon for producing satisfactory prints, showing the most delicate lines and markings of diatoms, and toning to any desired shade. Avoid over-printing ;

wash but slightly in two changes of water, the last slightly acidulated with acetic acid, and use an acetate-of-soda bath. Undesirable portions of the negative may be stopped out with a mat of suitable shape. An ordinary cabinet card makes a neat mount, of convenient size, upon which may be noted the name of the object or specimen, objective and magnification employed, and any other matter referring to print or negative that it may be necessary to note.

A carefully kept note book is a most important aid to the worker in photo-micrography, and it should contain a record of his failures and successes alike. Notes should be made of the specimen, objective, magnification, exposure, plate and developer, which, carefully studied, will almost certainly enable him to make a success of each exposure.

LANTERN SLIDES.—It is well to make the negative as far as possible of a suitable size for producing the positive by contact printing, which is convenient and satisfactory; then there can be no doubt that the reproduction in the camera affords better results. Slow gelatino-bromide plates, such as Carbutt makes for this purpose, produce very satisfactory work, but the chlorides are so far superior that there can be little doubt of their being exclusively employed for positives in future. There is a richness of tone combined with great transparency in the shadows, and clear glass in the high lights, quite unattainable with bromide emulsions and rivaling the best wet work. I shall show to-night slides made by both processes, and I think there can be no doubt as to your verdict upon the question which is the better. Though neither may be what we should like, the chlorides most certainly have the advantage in all particulars.

To secure the best results, most objects should be specially mounted for photographing. Some are best in a resinous medium, such as Canada balsam, but most delicate tissues are obscured or entirely obliterated in this medium. So far as possible, all preparations should be mounted in a fluid of some description which will distinctly render visible many tissues and markings which would be lost in balsam. This subject, however, is one of so great extent that it would require a special paper, and I merely refer to it now because of its importance, hoping at some future time to enlarge more fully upon it.

[Report of Meeting, May 26.]

A Special Meeting of the Society of Amateur Photographers of New York was held at their rooms, 1260 Broadway, on Tuesday evening, May 26. The members were called to order at 8.30 by President BEACH, in the chair.

The PRESIDENT announced a Social Meeting, June 3, and invited any members who so desired to accompany him on a trip to New Jersey June 2. He also announced that Mr. J. Traill Taylor was to speak before the Photographic Section of the American Institute, Tuesday evening, June 2, in the new rooms, in the Mercantile Library Building, and extended an invitation to the members to be present on behalf of the Section.

Mr. C. A. NEEDHAM was then called upon to set up and show his apparatus for holding backgrounds, which was done before the audience, and its working illustrated. In explaining some of its features Mr. Needham said: "The bottom of the device is supplied with a spike which fastens into the floor, and the top has a rubber pad which prevents the upright from slipping when placed in position against the ceiling.

"A swivel allows the horizontal arms to be turned in any direction. One of the arms is intended to support a reflecting screen. The background can be raised or lowered at will. The light from a side window is about as near an approach to a good gallery light as can be found. When the light comes from the top it gives very deep shadows under the chin and nose. The ordinary parlor window makes a good and efficient light. We have long needed some good way of supporting backgrounds, and that need this device is supposed to meet. How near it comes to it, I leave the amateurs to judge. It is designed mainly for amateurs' use, where the light comes from an ordinary window.

"The extension rod at the top is held by a ratchet. It is adjustable to almost any height of ceiling, from 8 feet up to 14 or 15 feet. It can, however, be constructed for even higher ceilings than that.

"The background shown is intended for a Rembrandt effect. The head is posed with the illuminated side against the dark portion of the background, and the shadow side against the lighted tint; the illuminated side of the face is thus relieved against the dark background."

[The device consists essentially of three bars, the two outside ones sliding parallel with each other in opposite directions on the middle bar, on which are supported horizontally, at right angles to the bar, and to each other, two removable arms. Each of the sliding bars has a metal cap, one carrying a short spike to fix in the floor, the other a rubber pad to press against the ceiling. These bars are extended in opposite directions till the lower one rests on the floor, and the upper one presses against the ceiling, in which position they are clamped by a ratchet and lever. A small painted or plain background is then suspended from one arm, and a reflecting screen from the other. The arms, with screens attached, can be raised or lowered, or revolved around the vertical support. The whole is, when packed, light and portable, and can easily be set up in any ordinary room.]

The SECRETARY then explained and exhibited some cameras and tripods sent by the manufacturers. A tripod, and the "Fairy" camera, by E. & H. T. Anthony & Co., was first shown. The tripod is of the "Taylor" pattern, two metal plates on each side of the lower length taking the place of the usual pegs and holes to prevent the legs bending inward when set up. The tripod top has, on the lower side, three brass springs which fit between the two separable parts of the upper portion of the leg when in position, and keep them firmly pressed into the supporting pegs.

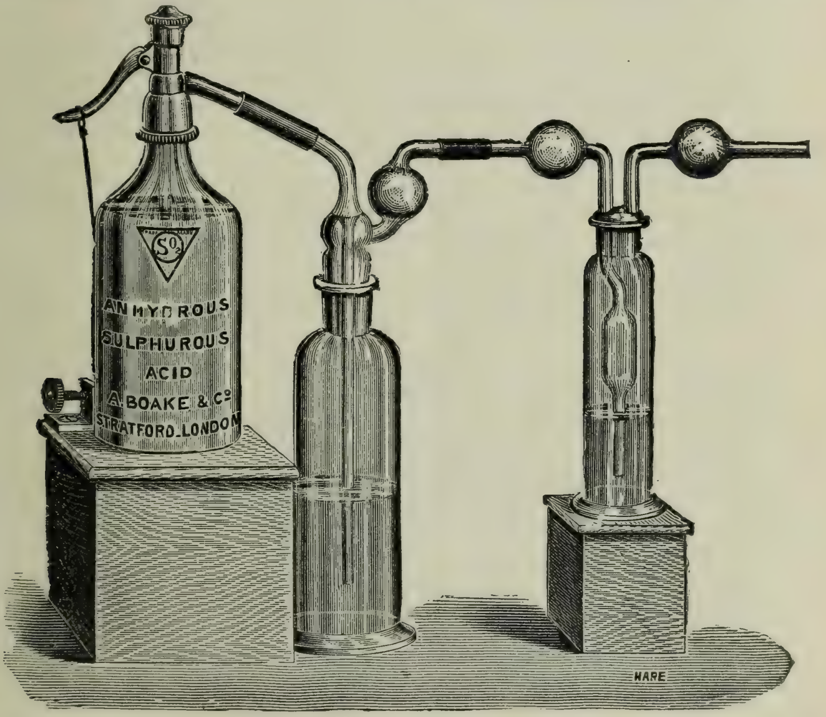
The camera shown was a 6½ x 8½. The points alluded to were the use of two hooks to hold the folding bed extended, thus doing away with the loose screw generally employed; the focusing by rack and pinion, the easily adjusted swing-back, the front rising and falling on the metal guides, and especially the reversing arrangement. The back portion of the box is detached from the bed, the front portion of the bellows makes a quarter of a revolution, and by key-hole slots the back portion is again fastened to the bed; thus bringing the length of the plate the opposite way to what it was before. The light and convenient slides and the portability of the whole outfit were noticed.

The Scovill Manufacturing Co. sent their new sliding tripod, which is light and compact when folded, and admits of adjustment to unequal ground, a point often of much importance. With this was a "Petite" box, of quarter size, nicely made of polished mahogany, though of the "cheap outfit" class. In this camera the use of a screw for rendering the bed rigid is also done away with, a sliding bolt taking its place. The single swing-back is simple and easily controlled.

The "Manifold" camera, also made by the Scovill Manufacturing Co., was then set up. This has an extension bed in three pieces, and an unusually long bellows, a point of great advantage in using long focus lenses. Ordinarily, the box is front focusing by a rack and pinion; when the extension bed is used, the screws controlling horizontal and vertical swings are released, and the approximate focus is obtained with the rear portion of the camera, the fine focus by the rack and pinion. The ground glass is not detached, but so fastened that the slides can be pushed in in front of it. There are no holes through the front board, thus lessening the risk of light being admitted. A spring holds the front in position; the lens can be raised or lowered by a slight pressure. The plate-holders accompanying this camera are of the "Daisy" pattern. The back of the box is reversible, the box being made square. The arrangement for vertical and horizontal swings is the invention of Mr. W. J. Stillman.

The PRESIDENT announced the presentation to the Society, by Mr. Atkinson, of a stereoscope and a number of stereoscopic views made by himself, and then showed a newly devised "portable dark room," recently invented by William Wrightman Walker, of Troy, N. Y. The object of the apparatus is to dispense with carrying around several dry-plate holders, and to furnish a compact and ready means of changing plates from plate boxes to the holders and *vice versa*. It consists of a box fourteen inches square by two inches in depth, open at one end, which forms a base for the apparatus when set up, and serves to contain it when packed. On the upper, broad side of this base-box are four metal key-hole slots, arranged to receive the upper portion of the apparatus. Upon the base-box are mounted three hinged boards, in two of which are ruby glass windows. These boards form, when unfolded and set up on the base-box and their ends secured by projecting screws in the slots, three sides of a box. The open ends are protected by thin rubber cloth, having elastics to fit tightly around the operator's wrist. The joint made by the cloth coming in contact with the upper face of the base-box is closed by two hinged, narrow wood strips, lined with velvet. The box of plates and plate-holder is inserted in the sleeve by stretching the elastic and set on the base-box; a focusing cloth is then thrown over the head to permit the operator to easily see into the box through the ruby glass in the upper side. The light from the ruby window at the front illuminates the inside of the box. The hands are next inserted in the elastic sleeves, and the plate-holder and plates are easily manipulated and changed. To turn the plate-holder over from one side to the other, it is withdrawn into the sleeve. The height of the box inside is about six inches. After the plates are changed the box is very quickly taken down and packed in the base-box.

Mr. **Beach** set up and took down the box, and went through the manipulation of changing plates.



[The left hand bottle contains the liquid gas; center contains distilled water; right hand bottle contains the caustic soda solution.]

He also called the attention of the Society to the modified Prosch shutter, called the "Eclipse." He said there is a pivot at the top, and on the front is a lever frame which passes a string around the axis of the shutter. On the back side is another lever from which a spring is intended to go. This is a curved arm, and it has notches on it so that the speed of the shutter can be regulated by pulling the spring up or down, as desired. It is set off with a kind of hair trigger—a sort of toggle joint—so arranged that when you pull the string there is no friction. It seems to be very easily worked and very certain. There is a pin at the end of the string so that you can hold the shutter open to focus. I think the proper way would be to have a method of attaching the pin directly to the shutter, so that it would be permanent.

The **President** also showed an arrangement for saturating water with sulphurous acid gas, made by A. Boake & Co., of Stratford, England.

When the use of sulphurous acid for preserving pyro in solution was first recommended, considerable trouble was experienced by many in finding sufficiently pure and strong samples here, that generally offered being unreliable. The apparatus in question was imported, and Mr. Beach said he believed it to be the only one of the kind in New York, and offered to supply any member who wished to experiment in this method of preserving pyro. The apparatus consists of a glass bottle like a mineral water syphon, which is tested up to 200 pounds per square inch, and which contains the liquified sulphurous acid gas, this exerting a pressure of about 30 pounds to the square inch. Connected with this by glass and rubber tubing is a smaller wash bottle, in which is placed the distilled water intended to be saturated, and which is connected with a second small bottle containing a solution of caustic soda. By turning a milled head on the syphon, the pressure is relieved, the liquid acid is converted into gas, which bubbles up through the distilled water, and gradually saturates it; any excess of the irritating gas passing into the second bottle, where it is absorbed by the soda solution and prevented from escaping into the room. The wash bottle used is known as the "ether" form, and is made wholly of glass, no cork stopper being used. Only a few moments are required to saturate 16 ounces of water, which will preserve 8 ounces of pyro in solution.

The cut on page 371, taken from the *Photographic News*, shows the arrangement of the apparatus, which was put in operation and practically illustrated by Mr. Beach. He also showed a tin box used several years ago in packing dry plates, and also read part of a letter from Dr. S. C. Passavant, of San Francisco, Cal., manufacturer of the Passavant Dry Plate. After asking for a copy of the report of the Committee on Dry Plates, he writes:

> I am not conceited enough to believe my plates to be perfect; in fact, I know of several weak points, which I am trying hard to overcome.
>
> The dry plate of the future will be a very different one from to-day's, and every man concerned in photography ought to do his best to make such improvements, which lead a step nearer to that plate of the future. Improvements can only be made if one is aware of the debilities which one should try to overcome; and I esteem the great task your committee has undertaken the more, as I am satisfied that it is not its only object to recommend a good and reliable plate to the members of your Association, but that in advising the different plate-makers of the faults their plates have, it endeavors to make them come nearer to the plate which to-day only remains an ideal. I, therefore, request you to let me know freely the opinion of your committee. I, for my part, prefer a well-meant blame to an undeserved, flattering praise.
>
> In No. 190 of the *Photographic Times* I have studied with the greatest interest the description of your electric standard light for testing the sensitiveness of plates, and I congratulate your Society on the acquisition of so ingenious an apparatus.

The lights were then turned down and about one hundred slides were shown on the screen. About thirty of these were sent by the Philadelphia Society, and were very much admired, especially some views by Mr. Randall, and a winter scene by Mr. Walmsley. A series of views by Dr. Mason, illustrating the incidents of a ride in the country, was the most extensive contribution from the members, and was extremely well done. A deserted mill elicited hearty applause. Slides taken on an excursion the previous Saturday, by Mr. Brush, showed the value of lantern slides as souvenirs of such pleasant occasions, and the celerity with which a view can be presented before a number of people at once. Views of the Capitol at Washington, and of a child on horseback, in Mr. Brush's usual successful manner, also several excellent slides of steamboats by Mr. Benjamin, and of landscapes by Mr. Black and other members, were shown; followed by a number of instantaneous views of vessels and other subjects, by Mr. Atkinson, mostly on collodion plates.

It had been intended to have the slides criticised by the members, but most of them seemed to prefer to say nothing, so that part of the programme was scarcely a success.

The meeting adjourned at 10:30.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

June 2, 1885.

President NEWTON in the chair.

The Photographic Section of the American Institute held its last meeting of the present season in its new room, in the Mercantile Library building (Astor Place). This room is more commodious and better adapted to the wants of the Section than any that have been previously provided by the Institute. The room will comfortably seat three hundred persons, has excellent advantages of ventilation, is well adapted for the exhibition of lantern slides and framed photographs of every variety. It is also well suited for the demonstration of the different processes of photography and the exhibition of all novelties in the art.

The Section will hold its first meeting of the coming season on the first Tuesday evening in September, 1885, when it is expected a programme will be provided by the Executive Committee that will prove both useful and entertaining to all true lovers of the art.

The receipt of the various journals was acknowledged.

The Secretary read a letter from the Philadelphia Society of Photographers, in regard to the exhibition to be held there.

REPORT OF THE EXECUTIVE COMMITTEE.

Mr. President and Gentlemen: This being the last meeting of the season, it is expected the committee will briefly recount the work done during the past winter. In harmony with this custom, therefore, the committee would state that at the meeting on the first Tuesday in September, 1884, which was the first of the present season, the Section was entertained by Mr. Thomas Faris, who read a paper entitled "Personal Reminiscences," and by Mr. H. N. Grenier, who delivered a lecture on "Line Work Negatives."

At the October meeting, papers were read by Messrs. Partridge, Bogardus, McGeorge and Gardner, on "Photographic Literature."

At the November meeting, the first part of the session was occupied by the members in the expression of tributes of respect and the passage of resolutions respecting the loss by death of one of the Section's most prominent supporters, Mr. Henry T. Anthony.

The remaining portion of the evening was taken up by Mr. L. H. Horgan, in the reading of a paper entitled "The Value of a Photographic Library of Reference," and by Mr. Duchochois' paper on the "Action of Light on the Salts of Silver."

At the meeting in December, Dr. Ehrmann read a paper on "Photographic Literature," which was followed by a discourse on some of the theories of the action of light on the gelatine plates, by Mr. David Cooper.

This gave rise to a discussion respecting a suitable varnish for dry plate negatives and the best modes of protecting them from injury.

The Chairman of the Executive Committee presented a list of photographic books, and a resolution was passed that these be added to the library, excepting such as might already be in it.

At the January meeting, a paper on "Photographic Ethics" was read by Mr. Percy A. McGeorge and discussed by the members; also a number of books recommended by Messrs. Partridge, Grenier and Roche, after which the usual routine of business was attended to, and the Section adjourned to meet on the first Tuesday in February, when a lecture was given by Mr. S. M. Spedon, entitled "Characters and Characteristics," which was preceded by an introductory paper by Mr. J. B. Gardner, and followed by a discussion on the "Art Element in Photography."

The subject for the March meeting was "Fluorescence and Phosphorescence," by Prof. L. H. Laudy, and "Talks with Photographers," by the Chairman of the Executive Committee.

At the regular monthly meeting in April, Dr. Ehrmann read a paper on "Whipple's Crystallotype Process," which was discussed by the members and distinguished guests.

In addition to the usual routine of business at the May meeting, a lecture was delivered by Dr. M. N. Miller, on the "Theory and Practice of Photomicrography."

The Section has also during the past season, as in all previous seasons, been the headquarters for exhibiting photographic novelties, whether of apparatus, negatives, proofs or new chemical formulas.

This, in brief, recounts the principal work of the season, which closes to-night with a paper, by Mr. J. Traill Taylor, entitled "The Reproduction of Negatives, whether direct, reversed or enlarged."

In managing the programmes for these meetings, it has been the aim of the Executive Committee to provide the best available talent on photographic subjects of general interest, and which would tend rather to the illustration of principles than to detailed methods and demonstrations of particular branches of the art. No photographer, therefore, has been expected to reveal any of his trade secrets, while at the same time he has been at liberty to speak freely or ask any questions on such matters pertaining to the art as might tend to lift the profession to a higher plane of usefulness.

Thanks to the publishers of our photographic literature for their generous reports of these meetings, for they have given to those who labored with us a larger audience and a stronger incentive to impart such instruction as they might deem most useful to the craft. Not only have the publishers thus proffered their kindly help, but furnished gratuitously to the Section their most valued productions of the press.

But notwithstanding the fullness of the reports of the Section during the past season, in the *Photographic Times* and BULLETIN, those who did not have the opportunity to personally attend the meetings and witness the illustrations of the various subjects treated, and who were thus deprived of the magnetic force that only accompanies oral discourse, and the kindly and social feeling that naturally grows out of the habit of frequently meeting together in public and friendly counsel, are most likely to read such reports with the least interest, profit or appreciation.

Hoping, therefore, that all professional, as well as amateur, photographers who possibly can will make it a matter of duty as well as of pleasure to give their countenance and support to the Section during the coming season, which commences its regular monthly meetings the first Tuesday in September, 1885, the Executive Committee subscribe themselves their most obedient servants,

J. B. GARDNER, *Chairman.*
T. C. ROCHE.
W. E. PARTRIDGE.

Mr. NEWTON reported the result of his interview with Mr. Dalrymple, the passenger agent of the N. Y., L. E. & W. Railroad, in reference to taking members of the Section to Buffalo and Niagara Falls, at reduced rates, using excursion tickets, so that those wishing to attend the convention at Buffalo, from the 14th to the 18th of July, can do so.

This road would issue excursion tickets to members of the Section, and those who would like to go with them, for $6.00, to Niagara Falls and Buffalo, and good for ten days.

The West Shore road offers the same for $9.25.

A motion was made, seconded and carried, that the president be appointed a committee of one to communicate with photographers as to who will go on this excursion, and get definite answers.

President NEWTON—As this is the last meeting until September, another committee will be appointed to arrange for our annual field day and excursion, to determine when and where we shall go, what we shall have when we get there, and when we shall come back. I appoint Mr. Gardner, Mr. Mason and Dr. Elliott on that committee.

Mr. Taylor's paper was then read:

The Reproduction of Negatives, whether Direct, Reversed or Enlarged.

BY J. TRAILL TAYLOR.

There are so many circumstances under which the duplication of negatives is desirable as to render no apology necessary for bringing forward the subject for discussion in the Photographic Section of the American Institute.

By the introduction of new methods, this art, previously considered impossible as regards identity of duplicate with original negative, may now be considered as having been brought to a state of perfection. Prints have been exhibited side by side, some from original and others from reproduced negatives, which were so nearly alike as to render it impossible to distinguish between them.

As to the advantages which may arise from such reproduction, they may be inferred from the following considerations: The demand for proofs may be so great as to transcend the printing capabilities of a single negative; even with the greatest care valuable negatives sometimes get fractured, hence an advantage in having another in readiness; there are several processes of mechanical printing which demand the employment of a reversed negative; sometimes an original negative may prove smaller or larger than is required for certain purposes, rendering necessary the alteration of its size; and, lastly, an original negative may be too dense or too thin for effective printing, although otherwise sharp and full of detail. In all the cases mentioned the reproduction of the negative becomes of use.

The simplest method of producing a duplicate negative is by the agency of a gelatine dry plate. In the presence of so many plates as are now procurable, it would be somewhat difficult to say which are best adapted for the purpose. A few years ago I thought that the slowest brand of plates of a certain maker was best, because on one occasion I reproduced a negative so well that the duplicate gave better prints than the original. On that occasion I placed the negative in contact with the plate, screwed them firmly together in a printing frame and gave an exposure of about one second to a gas flame at a distance of six feet. This was developed by four parts of a saturated solution of oxalate of potash rendered decidedly acid by oxalic acid, one part of saturated solution of protosulphate of iron acidified by sulphuric acid and two parts of water. This gave a transparency quite full of detail, yet soft and delicate. There was nothing in the negative that was not reproduced in the transparency, from which was made a print in like manner, using as a developer a ferrous oxalate solution containing rather less water than in the previous case.

Since the period referred to I have substituted, with equal success, pyrogallic acid for the ferrous oxalate developer. The only precautions necessary in this method of making a negative are to give such an exposure as will insure every detail being reproduced in the transparency, and making it sufficiently thin to secure the registration of every tint and bit of detail in the original.

Once in possession of a suitable transparency, the production of a negative follows almost as a matter of course. The system which I recommend adopting is to develop the transparency with oxalate containing a large proportion of citric acid, a pyro and potash developer being employed for the resulting negative. In this way a negative may be duplicated in the most perfect manner.

In making an enlarged negative, it is better that the enlarging be done in the first instance. The copying camera is directed against a uniformly-lighted north sky. Any lens will serve the purpose, provided it is not of too short focus. That which I prefer is a single achromatic landscape lens, having a focus somewhat longer than the largest dimensions of the negative, toward which its back end is directed. It is advisable that all the adjustments be approximately made with the largest diaphragm in the lens, afterward inserting the smallest and refocusing. With an objective of this class, there will be a considerable variation between the focus obtained by a large diaphragm compared with that from a small one; a peculiarity of landscape lenses, the smaller the stop the longer the focus. Sharpness is essential, and the services of a powerful eyepiece must be had in requisition. With plates of a slow class, such as I prefer for this purpose, and with a degree of enlargement equaling from two to three diameters, an exposure of from five to twelve seconds will be required. But this point must be determined by the circumstances of each case. Contrary to what some might expect, I find that a negative which I took by a single achromatic landscape lens will bear enlarging three times without showing any noticeable falling off as regards sharpness. From the enlarged transparency a negative is obtained by superposition in a printing frame. I advise that exposures by contact be made by a candle or gas-light, placed invariably at a definite measured distance, the light of day being unmanageable.

According to whether the film side or the back of the negative be placed next to the lens, so will the transparency be reversed or non-reversed, the final negative also partaking of this character. Where any detail is wanting in the enlarged transparency, it can easily be supplied by the brush or pencil, and as the same can be done on the final negative, great perfection may be attained—a perfection far exceeding the original negative, which may have been defective.

The collodio-bromide emulsion process lends itself readily to the production of reversed negatives by a single operation, these being either of the same or a different size from the original. All who understand the elementary chemistry of argentic-bromide processes are aware that the image is formed by a reduction of the bromide into the metallic silver. The fixing of such an image is effected by any agent which removes the unaltered bromide without attacking the metallic image, the result being a negative. But if an agent be employed having entirely opposite properties —that is, dissolving out the developed image, and leaving the bromide intact—then will the resulting picture be a transparency. Previous to being "fixed" it was a negative; the fixing bath makes it a transparency.

To determine the constitution of this converting bath is not difficult. What dissolves silver without acting upon bromide? The most obvious solvent is nitric acid.

I shall now explain in detail the best method of working this process, premising, first of all, that, while the vehicle for receiving the image is collodion, it is not necessary it should be an emulsion, although it is preferable. A bath-plate will answer equally well, provided the collodion be salted with eight grains of cadmium bromide and the plate be excited in a silver bath of not less than sixty grains in strength. A longer time than is usual for exciting an ordinary negative collodion film must be allowed, and the plate must be thoroughly washed. When a collodion emulsion is procurable, it is more convenient.

In whatever way the exposure is made, whether by camera or by superposition, it is imperative that the development (by alkaline pyrogallol) be carried to the fullest extent, and that the image be carried through to the back of the film. It is now a strong transparency. The plate is washed and placed in a tray, and a mixture of nitric acid and water in equal parts is then poured over the surface. This acts inversely as a fixing bath, for it effects the removal of the developed image, leaving the bromide. The acid is now poured off and the plate well and carefully washed. On examination, it is now seen to be a negative, but too thin to be of use in printing. But by exposing it to light for a few seconds, and again applying the alkaline pyro, the whole of the bromide left in the film becomes reduced to the metallic state, the result being a strong, vigorous negative.

In the case of a gelatine plate, some other solvent for the image must be sought, as nitric acid destroys gelatine. My experiments in this direction being yet incomplete, I defer its consideration.

Mr. Bolas' method of utilizing the principle of solarization is thus described by Dr. Eder: A gelatino-bromide plate is soaked for a few minutes in a four per cent. solution of bichromate of potash, and after this it is rinsed for a few minutes in a bath composed of equal volumes of alcohol and water. On removal from the alcohol bath, it is laid down on its back, and the superfluous moisture removed from the film with blotting paper, after which it is placed in a warm place to dry. When dry, it is exposed under a negative, and about the same exposure given as would be necessary for printing in carbon from the same negative; that is, from two to five minutes in sunshine, or from ten to fifteen minutes in diffused light. After exposure, the plate will be impressed with a delicate and perfect positive, owing to the darkening action on the bromide of silver as well as on the bichromate of potash. The plate is then soaked in cold water to remove the excess of bichromate of potash, and after that developed by either pyrogallic acid or ferrous oxalate. Under the action of the developer, the picture rapidly makes its appearance, and after fixing gives an intense negative.

For duplicating a portrait negative, on a scale of larger dimensions, especially one in which the head approximates life size, this may be done in an effective manner by first making an enlargement by solar camera or development and finishing it by merely fixing without toning, so as to insure its being of a reddish brown color. This is then submitted to the retoucher, who pencils in such details as are lacking in the lights. From this a print is taken by superposition in the printing frame in the usual way, the printing being carried to the extreme. This print, which is negative, is, like the former, fixed without being toned, and its lights in turn adjusted by the retoucher. From this paper negative prints may be obtained possessing at once boldness, vigor and delicacy in the half tones.

Carbon or pigment printing forms a good method for producing a transparency from which to obtain the ultimate negative. But apart from this system of printing being so little practiced here as to require a special education in connection with it, I hazard the opinion that a transparency of equal merit for this purpose may be obtained from the employment of the gelatino-bromide plates. I therefore do not enter upon the reproduction of negatives by the carbon process.

The "dusting on" process is a simple and easy one for reproducing a negative by a single operation; but the negative thus obtained is reversed. A plate of glass is coated with five drams of a saturated solution of bichromate of ammonia and three drams each of honey and albumen dissolved in a pint of water. This is dried by a gentle heat, exposed under a negative in the printing frame—for a few seconds only if the light be bright—and is then placed upon a table in a room lighted by a candle. A large brush of camel's hair charged with finely powdered graphite is now applied to the surface with a circular motion, and in course of a few minutes the image is developed. This process of development can only be effected when there is a slight degree of moisture in the atmosphere of the room, and which can be artificially induced.

President NEWTON—This is not only an interesting subject, but one that, to both amateurs and professional photographers, can be made an exceedingly useful one, if a negative can be produced from an original, a duplicate, equal to the original. There are many negatives that are of no value.

The first thing either an amateur or professional photographer has to do (in possession of such negatives) is to make transparencies, from which negatives can be made when required. The principle underlying the fact is, that if the gelatine plate is exposed to diffused light under a negative, without the previous treatment of bichromate of potash, a second negative results.

I made an exposure in that same manner—taking a negative and putting under it an ordinary gelatino-bromide plate. The exposure was not quite right, and the development was not so easy, but it was very plainly to be seen the result was a negative.

Mr. J. TRAILL TAYLOR—This subject was discussed here some time ago, and it was then demonstrated that the presence of bromine on an impressed plate will entirely obliterate such impression.

Mr. NEWTON—Bromide-iodide or iodide produces the same result. In the use of the bromo-iodide or collodion emulsion I have made negatives from a negative by long exposure to sunlight, and it is pretty well known that in a dry plate, in which the percentage of bromide is small, everything is reversed, and, instead of getting a printing negative, a positive is obtained.

The experiment that Mr. CANFIELD has told about was suggested by me because I had not tried the gelatine plates. It came about by his speaking about some chloride-gelatine plates or transparencies. I suggested that there was a good deal of fiction in the word chloride-gelatine plates, because these plates are exposed and developed like the bromido-iodide. You can't develop a negative with simple chloride of silver. I tried that enough to satisfy myself on that subject. You can have a chloride, but bromide or iodide must be used in conjunction with it to a certain extent in order to develop.

The theory of Mr. Carey Lea is that there is no chemical action whatever in the production of a photographic image—nothing but mechanical force.

Those who are familiar with the experiments made by Mr. Lea will be satisfied that he had good grounds for that opinion. I think that Mr. Duchochois, who has probably had as much experience in determining the action of light on the sensitive film as any one, could give us a little of his experience in that line.

Mr. Duchochois then spoke on the same subject, after which Mr. Rockwood also gave his experience in duplicating negatives. He said:

"I suppose my experience is the same as that of every one else.

"I have never seen the process yet that has given a negative equal to the original.

"In working, I got nearer to the original negative by leaving the positive unfixed, washing it thoroughly, and then copying without fixing; the results were very fine in the enlarged negative.

"If I am to make a life-size negative from a cabinet, I make a life-size positive first, then print in contact on a dry plate by diffused light.

"By leaving the positive unfixed a very nice film is obtained for retouching.

"I made negatives with albumen twenty-nine years ago. We used whites of eggs in combination with honey."

After a short discussion between Mr. Ehrmann and Mr. Duchochois, Mr. Faris gave his views on the same subject.

Mr. NEWTON—In making duplicate negatives from gelatine plates, I agree with Mr. Taylor, to make the positives and develop with oxalate of potash or the oxalate developer.

I made duplicate negatives in a way that I do not think was ever thought of before; from positives and prints upon albumen paper. Mr. Rice had some beautiful instantaneous pictures sent from England. They were rolled up and broken considerably. I thought I would try and make negatives from these prints. I took them home and put them in water; then placed between blotting paper and put in a press and left them there all night, and in the morning they were perfectly smooth. I put them in the press again, and left them until they were entirely dry and perfectly straight, and then put them into the holder for my camera.

I placed one of the prints with the albumen side up, placed a gelatine plate over it, and two thicknesses of glass over it. The camera opening pointed toward a piece of white paper or cloth. I made seven sets of negatives, equal to the originals. It was a novel way of duplicating negatives. I supposed, of course, that the albumen would make a granulated print in the negative, but it did not, and I found it did not succeed as well upon plain paper as upon albumen.

Last Saturday (Decoration Day) I made some pictures of the steamer *Brennan*, in the rain. I thought I had just spoiled the plates, but I found out that they were very fine indeed.

Mr. NEWTON promised to exhibit these pictures at a future meeting.

The thanks of the Society were given to Mr. TAYLOR for his valuable and practical paper.

Mr. MASON exhibited a lens, in which the slit for the insertion of the diaphragms is self-closing, after which the meeting adjourned.

◆

[*From Photographische Correspondenz.*]

THE NORMAL POTASSIUM DEVELOPER.

BY DR. EDER.

THE introduction of carbonate of potassium or potash in place of other alkalies in the pyro-developer for gelatine plates is due to Dr. Stolze. This original formula has experienced many changes, having also been modified once by me.

After a prolonged time of observation and numerous experiments about the durability of the solutions and the character of the pictures, I have come to a final formula, which is composed as follows, and is proposed for a normal potash developer:

A. 100 c.c.m. water;
75 grm. neutral sulphite of soda;
8 drops (or ½ c.c.) concentrated sulphuric acid;
12 grm. pyrogallol,

are dissolved (in rotation as above) and filtered. The solution will keep for several months.

B. 200 c.c. water;
90 grm. carbonate of potassium (chlorine free);
25 grm. neutral sulphite of soda,

are dissolved and the usually turbid solution filtered after repeated shaking.

Before use are mixed

100 c.c. water.
3 " pyro-solution (A).
3 " potash-solution (B).

The negative is sufficiently strong in 2 or 3 minutes. The plate is then washed, *placed for about two minutes into a concentrated alum solution*, which removes to a great extent the yellow coloration of the film, again washed, and finally fixed.

The color of the picture is of darkish brown, and particularly suitable for instantaneous views on account of its thickness.

When slightly over-exposed, a few drops of a solution of citrate of potassium (1:10) or chloride of sodium (1:10) may serve as restrainer in this process; when greatly over-exposed, a few drops of bromide of ammonium (1:10), which latter is an extremely powerful restrainer.

If softer and thinner negatives are desired, twice the quantity of water is taken.

In support of my prescription it may be mentioned that salicylic acid, used for the conservation of the aqueous pyro solution, does not effect the long durability that my solution B does (my time of experiment being four months); the color of the negative is not so agreeable, and the sensitiveness is said to be less. Citric acid in place of sulphuric acid (as mentioned in one of my former formula) acts as restrainer in the developer (as mentioned by Mr. Scolik); this causes particularly a restraining of the shadows and they do not obtain sufficient strength; I therefore prefer sulphuric acid, which has been recommended for this purpose by several parties.

Sulphite of soda, without any acid, often colors the pyrogallic acid brown when in an aqueous solution, in consequence of a small quantity of carbonate of soda it may contain; other kinds which contain a little bi-sulphite of soda keep pyrogallic acid clear. To be sure, I always add acid.

The preparations should be free from any chloride. Carbonate of potassium, particularly, often contains much chloride of potassium; and a sample, dissolved in distilled water, acidified with nitric acid and filtered, should have, with a nitrate of silver solution, at most, a weak discoloration. Presence of silicious or sulphurous salts is of not much harm. But some kinds sold in trade are mixed strongly with soda, and have, when dissolved in the above quantity of water, much salt-like granular residue. Chemically pure carbonate potassium is too dear; the most suitable would be so-called salts of tartar, produced by heating tartar red hot.

Finally, it may be mentioned that equal parts of the *concentrated* pyro solution (A) and potash solution (B) after mixing will keep clear for days, and if in well-corked bottles even for weeks, without losing the developing strength, so that in this manner a concentrated stock solution can be produced, which needs only to be diluted with water immediately before use. For common use in the gallery it might be preferable to keep the several solutions in separate bottles.

The developer diluted with water assumes a brownish color in a few minutes, and should be used at once.

Translated by H. D.

[*From Photographische Correspondenz.*]

THE TRANSPARENCY OF GLASS FOR ULTRA-VIOLET RAYS.

BY V. SCHUMANN.

It is sufficiently known that even the most colorless optical glass has not an equal transparency for all kinds of rays of light. The more refractive rays, particularly, of the ultra-violet spectrum are absorbed completely by extremely weak glass plates. The French scientist, A. Cornu, it is true, has demonstrated, by his excellent view of the largest part of the ultra-violet solar spectrum, that certain kinds of optical glass transmit more rays than were generally accepted until that time. Cornu succeeded, with the aid of a photographic spectrum apparatus, whose lenses and prisms consisted of glass, in photographing the solar spectrum to the line, O, 3440.1. To penetrate further into this domain, completely invisible for the human eye, with his glass spectrograph, even Cornu did not succeed. The thickness of the glass, through which the solar light had to pass in Cornu's spectrograph, absorbed all rays that were more refractive than the Frauenhofer line O.

Fortunately, we possess in calcite, and more yet in rock crystal, media which, with a large and probably even absolute transparency for ultra-violet light, are admirably adapted for the manufacture of lenses and prisms for spectral purposes. Quartz, particularly, in the shape of a Cornu prism, that form by which alone the disturbing circular polarization is eliminated, is more suitable than any other material for the sharpest projection of even the finest spectral lines.

But to complete our knowledge of molecular parts, the simple apparatus with prism and lenses is not sufficient. For this we require vessels of different kinds, suitable for the reception of liquid and gaseous substances, under different pressures. A number of these implements can be made very well out of quartz, and even if the price is extremely high, the experimentist has to be satisfied to possess in quartz a means which is admirably qualified in almost every respect for the examination of the more refractive exprismatic spectrum.

Only in one case, where spectral investigation would like to make use of the transparency of rock crystal, this material is not sufficient; that is, where an examination of the spectra of absolutely pure gases in a very diluted condition is desired. A "Plücker" glass tube is in such a case sufficient for the observation of the prismatic spectrum, but as these possess a proportionately great thickness, particularly in their luminous capillary part, they are entirely unsuitable for the ultra-violet experiment. A Plücker tube, closed on one end with a quartz plate, may be used for such a purpose, but the great sensitiveness of the gas pressure inside of the tube, reduced to a few millimeters of mercury, requires a cement between quartz plate and tube, and this cement, no matter how thinly applied, adds to the contamination of the contents of the tube, reducing its value to a mere illusion. Therefore, even these tubes closed with a plate for longitudinal vision, as applied first by Monckhoven (1877), and by Piazzi Smith (1879), do not fulfill all requirements.

If the contents of a Plücker tube are to remain clear, it has to be closed hermetically after filling. The application of quartz in the shape of a cap is therefore completely excluded. If such a tube is to admit of the transit of the more refractive rays, its body should be as thin as possible. Tubes which meet these requirements are furnished by Mr. Franz Müller, in Bonn, successor to Dr. Geisler. I have convinced myself by repeated photographic views of the spectrum, taken with the aid of such a thin Plücker tube, after Müller's new construction, that it has an extreme transparency for ultra violet rays, admitting the photographing of the spectrum much further into the ultra violet than is generally accepted. In consequence of this, I continued to test the transparency of their glass plates, and after having used microscopic covering plates of 0.125, m. m., for want of any more suitable means, I had Messrs. Reinfelder & Hertel, in Munich, grind me a crown glass wedge with optically even surfaces, which had a length of 30 m. m. and a width of 15 m. m., a thickness of only 0,0425 m. m. on the refractive edge, and on the other end only 2.0 m. m.

With the aid of this glass wedge, I found out the transparency of this kind of crown glass with my large quartz spectrograph, in the following manner:

(*To be continued.*)

Translated by H. D.

* * *

[*From Photographische Correspondentz.*]

EXPERIMENTS WITH SOME OF THE LATEST DEVELOPERS.

BY CHARLES SCOLIK.

In the gelatine dry-plate process it is exactly as in former times with the wet process, with regard to formulas for developers. In the course of time a legion of these were published. But, although most of them were undoubtedly good, a thorough test would show that they were generally uselessly complicated, and that the simpler formulas previously published were entirely sufficient for practical use. As an example, might be mentioned the Stolze-Eder Potassium Developer, which has experienced the greatest number of modifications. Although the original formula of Dr. Stolze gave very good results, I approved of the modification of the second solution according to Eder, with the exception of the addition of citric acid, which I eliminated on account of its greatly restraining action. In my experiments I always prefer to use the Stolze Eder Potassium Developer. From impartial tests made by myself and others, and after experimenting for more than a year, during which time I tested, among many new developers, those of Abney, Bassano, Backrach, Beach, etc., I can point to my comparative table of developers tested, and confirm the opinion that Dr. Eder's Oxalate of Iron Developer, as well as the Stolze-Eder Potassium Developer, and Edwards' Pyrogallic Developer deserve the palm.

Notwithstanding this my opinion, I am always ready and willing to have my attention drawn to anything new that may appear before the public, with the idea of testing it.

This leads now to the proper object, to which I have paid very careful attention, inasmuch as an entirely new material for developing has been proposed, and which, to judge from tests made, proved to be highly important as the results were entirely satisfactory. The developer is Hydroxylamine, and is characterized as a developer possessing all the advantages of the Oxalate and Pyrogallic Developers, without their disadvantages.

Hydroxylamine may be considered as ammonia, in which the hydrogen is replaced by Hydroxyl, and whose formula is $NH_2(OH)$. Hydroxylamine does not exist isolated, but appears, dissolved in water, as a strongly alkaline solution, and united with acids forming salts. The latter particularly are suitable for a developer. I bought Hydroxylamine from Dr. Schuchardt in Görlitz, who makes the same in three different manners: 1, From nitric ether, chloride of tin and muriatic acid. 2, From nitrous ether, ethyl-iodide, nitrite of silver and gaseous muriatic acid. 3, From fulminating mercury and muriatic acid, by reduction with sulphuric acid.

The developing formula is as follows:

A.	Hydroxylamine hydrochlorate	32	parts.
	Citric Acid	15	"
	Potassium Bromide	20	"
	Water	480	"
B.	Caustic Soda	60	"
	Water	480	"
C.	Potassium Bromide	20	"
	Water	480	"

For a plate of 7½ x 5 inches the film is first soaked for about one minute, in 3½ oz. of water, containing 1 drachm of solution A, and then 22 drops of solution B are added. The advantage is, that these plates have fully the character of the wet plates; that the developer is just as suitable for all kinds of exposures as the Pyro developer; and that it absorbs no oxygen from the air.

I have tested this developer and can state, that with the formula given and after a development of 10 minutes, I was almost in doubt whether I uncovered my lens or not, but I washed the plate and laid it into an alcoholic Pyrogallic acid developer, and the image appeared rapid and good; a second plate I developed with a considerable increase of caustic soda. Notwithstanding this, not a trace of an image seemed to appear, so that I almost doubted the developing power of the Hydroxylamine, although I knew that the proportions of its restrainer were too great, as in solution A 15 grains citric acid and 20 grains bromide of potassium were taken to only 32 grains hydroxylamine, thus producing not only a very strong restrainer, namely, citrate of soda in very large quantity, but also showing the presence of bromide of potassium. I therefore modified the formula by preparing a solution of the hydroxylamine 1:15, which, dissolved in caustic soda solution in the following proportions, I used for my comparative experiments:

I.—60 grm. Water.		
2 c. c.	Hydroxylamine	1:15
4 "	Caustic Soda solution	1:8
II.—60 grm. Water.		
3 c. c.	Hydroxylamine	1:15
5 "	Caustic Soda solution	1:8
III.—60 grm. Water.		
4 c. c.	Hydroxylamine	1:15
6 "	Caustic Soda solution	1:8

Pretty late in the afternoon four plates were exposed in succession, and with the same time of exposure.

The result obtained was as follows: With the first modification the image appeared very slow and showed frilling on the edges. With the second modification the image appeared just as quick as with the oxalate developer; was extremely clear, and had, after addition of a little bromide, sufficient strength after a few minutes. With the third modification the image appeared too quick, monotonous and weak, and could not be developed to the necessary strength, notwithstanding an addition of citric acid and bromide of potassium, the plate frilling after ten minutes in spite of all the alcohol which was added.

A further test, to employ caustic ammonia as alkali, remained, as was to be expected, without results. The proper proportion for the plates used was, therefore, the second modification, that is: To 60 parts of water, 3 c. c. hydroxylamine solution, 1:15, or still better, a solution of hydroxylamine 1:300, taking for a plate 21 x 13, c. m. the quantity required — 60 c. c., adding 5 c. c. caustic soda solution 1:8. In this solution the image appears just as quick as with the oxalate, or pyrogallic developer. After all details have appeared rapidly, a few drops of bromide of potassium, 1:10, are added as an intensifier. If the development is to be entirely restrained, a few drops of citric acid solution, 1:10, are added.

In case of under-exposure more of the caustic soda solution is added; when over-exposed add a few drops of bromide of potass, 1:10. Wilde's iodide restrainer and citric acid may also be used for intensification. If frilling should take place by too prolonged development, this can be avoided by adding alcohol. In regard to the caustic soda solution, I made the observation that it has to be well shaken each time, as it settles easily to the bottom, after which the solution is without any effect. The hydroxylamine solution remains colorless during developing, and does not stain the fingers nor the dish. The negatives have the character of wet plates if fixed in hyposulphite of soda. They have a bluish tone, a shining appearance without fog, and do not get any yellow fog. The price of this salt is pretty high yet, and the price in proportion to the oxalate of iron, potassium or Edwards' developers for a plate 21 x 13 c. m , is as follows:

Oxalate of iron solution	1.5
Potass developer	1.4
Edwards' developer	1.2
Hydroxylamine developer	5, 7 or 8

according to quality.

As regards the durability of the solutions and other tests, I shall report at some other time.

Translated by H. D.

Found in the Editor's Box.

A GOOD deacon of one of our city churches meandered along one of the docks yesterday, and, noticing a crowd of boys fishing, he commenced to reprove them for breaking the Sabbath. In the middle of his harangue he stopped suddenly to ejaculate, "Look out, bub, you've got a bite," to a small boy whose attention had been distracted from his line. Human nature was too strong for him.—*Saginaw* (*Mich.*) *News*.

Bibliography.

THE AMATEUR PHOTOGRAPHER. By Ellerslie Wallace, Jr., M. D. Philadelphia, Porter & Coates.

This handsome little manual is filled with good things photographic for the amateur. In 174 pages (octavo) the following topics are discussed in an able and practical manner: Photographic Apparatus; Emulsions; Developers; Wet Collodion; Bath Dry Plates; Washed Collodion Emulsion; Gelatino-Bromide; Printing; Posing and Arrangement; and an appendix containing a number of useful hints and definitions. In the chapter on apparatus the author discusses the various cameras, plate-holders, and the appurtenances in general use, with a statement that American amateurs are using more and more English goods of this character. We doubt this statement very much; in fact, our own experience, and that of many friends, is just the contrary. We recently saw one of these English outfits, brought over by an enthusiastic English amateur, and when he saw the light and equally well-made American outfits, he provided to sell the one he brought with him. We do not say the English outfits are ill-made, but in portability and adaptability to the various uses of the amateur, they are far behind the productions of the home manufacture. The Englishman builds his cameras as he does his houses, and they are as clumsy. American photographic apparatus is made with a view to lightness, and with a regard to the diverse uses demanded by modern photographic art. We have said thus much on this point, because we have heard this statement made several times in regard to the use of foreign apparatus by American photographers; and, upon careful inquiry, are entirely at a loss to find its origin, as it is contrary to fact, at least in and around New York.

The chapters on the various other topics are full of interest, and well written. We are glad to see such an able statement of the various collodion processes, and can strongly recommend them to our readers. The chapter on Gelatino-Bromide is good, and up to the time. We cannot but think it bad taste to recommend any particular kind of plate, when so many good ones are in the market, and so much depends upon the experience and mode of working of the operator.

In the matter of printing, we know of no better discussion of the subject than is to be found in these pages of Dr. Wallace. Blue, platinum and silver printing are described, together with "positives on glass" and lantern slides. The appendix is fully as useful as any of the other chapters, and is filled with a large amount of sound, practical information.

In spite of our difference of opinion on some of the points mentioned above, we must say this is a most useful little manual, and we are glad to have it within reach in our laboratory.

We regularly receive the following publications, and take this opportunity of acknowledging our indebtedness to the various publishers and editors:

The St. Louis Photographer always comes to hand filled with matters of photographic interest treated in a lucid manner and in a typographical dress at once clear and tasteful.

The Philadelphia Photographer needs no commendation from us; its able editor is too well known and appreciated. The interesting articles from the pen of Dr. Vogel always afford us much pleasure in the reading.

The Photograhpic Times is always prompt in appearing every week, and maintains the position it took at the beginning of the year.

Walzl's Monthly, with its well-stocked pages, maintains its good standing.

The Practical Photographer, of Chicago, in its neat octavo, with short and practical articles, under the editorship of H. D. Garrison, has just come to hand for the second quarter of the year, and is filled with good things.

Outing.—The now well-established journal of out-door life and healthful exercise has become so much improved lately that its old friends will scarcely know it. We enjoy it very much.

The Eye.—The lively Chicago weekly appears promptly and contains an abundance of good things. It is truly the photographers' family paper and contains matters of interest outside of those photographic that must be always welcome to the fireside.

The Manufacturers' Gazette we find a welcome guest to our editorial table. Its photographic articles reflect the good sense and practical photographic experience of its editor.

What Our Friends Would Like to Know.

N.B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—W. A. B. writes: "As I have worked the dry plate process only a short time, I strike a snag now and then. What is the effect of over-exposure on a dry plate; and what of under-exposure? What will most readily bring it up to clearness and intensify after developing and fixing? What will lessen the intensity? Don't one kind of plate work about as well as another?"

A.—Over-exposure gives thin and fogged negatives; under-exposure black and white, with no detail in shadows. To lessen intensity, use a weak solution of bromide of copper and, after washing, place in hypo. All brands of plates in the market are by no means of equal value.

Q.—S. A. asks: "What harm does ammonia do when used to neutralize the negative bath? Also, is commercial carbonate of soda fit to use in the negative bath? Inclosed picture may help you to tell the trouble with my bath."

A.—It is best to neutralize the bath with carbonate of soda. Common washing soda will do if you only need a small quantity; for large additions it is often too impure. The picture sent is fogged, and probably from organic matter in the bath. Make the bath alkaline with carbonate of soda; set it in the sun for some hours; filter, make decidedly acid with C. P. nitric acid, and it will work all right. If not, repeat the sunning of alkaline bath. We prefer Anthony's New Negative Collodion.

Q.—C. H. writes: "Ferrotype collodion was made as follows:

"Alcohol, 10 ounces; ammonium iodide, 80 grains; cadmium iodide, 40 grains; cadmium bromide, 10 grains; potassium bromide, 20 grains; ether, 10 ounces. When about to use, add 3 grains of gun-cotton to the ounce of collodion. Silver bath was slightly acid and ran 40–42 grains strong last Fall, and worked well until July 1. Then it got troublesome, and the ferrotype plates became streaked with white lines one-eighth to one-fourth of an inch wide. Iodine remedied this for a while, but not permanently. Old collodion was added and then nitric acid in alcohol, which effected a cure. Why is this?"

A.—Your collodion is too strong in salts. It is a great deal easier and just as economical to buy collodion already prepared. Anthony's New Negative Collodion has a good reputation; try that. The same silver bath will work with it.

Q.—H. B. writes: "I have had great trouble in fixing. The negative, previously beautiful and strong, comes out reduced, and the bath gets milky. Would soaking in iced alum water before development answer? Heat seems to be the cause of the trouble, and prolonged development with instantaneous views, using strong solutions."

A. Whenever you find difficulty in fixing a dry plate, take it out of the hypo; dry it; put on it a weak solution of perchloride of iron (4 drops to an ounce of water); then put it into a solution of hypo and alum, which will clear it up beautifully. Alum in lumps is preferable to the powdered; the hypo will not take up much of it.

Q.—C. H. again writes: "My son wants to try Lea's formula for preserving sensitized paper. Can he put the chlorate of potash and dilute lactic acid in the printing bath he now uses, without doing the bath an injury, if it does not preserve the paper longer than without these things in it? Is the toning bath the same as if these materials were not used? Also, I have ready-sensitized albumen paper; it prints nicely, but the prints are reddish yellow, which color does not disappear in toning. The toning bath consists of water 16 ounces, gold solution 3½ ounces, and soda until it turns red litmus slightly blue; then a little common salt. Now what can be done to give black tones? How must I dilute 'acidium lactium conc' for use?"

A.—The only answer to your question about preserving the paper by putting the materials into your present bath is, try it on a small quantity of the bath. In regard to toning, we see no reason to use any but the ordinary bath. We think that Mr. Lea would have said so if there was any change necessary. In the matter of the ready-sensitized paper, fume with ammonia fifteen minutes, and after printing wash in dilute solution of bicarbonate of soda before toning. We don't know how to dilute the concentrated lactic acid to suit Lea's formula.

Q.—C. A. R. G. writes: "The inclosed negative was exposed 2½ seconds out of doors, in the shade, about 10 A. M., and developed with *Ferrous Oxalate Developer*. During development (although the picture faded and turned dark) no trace of development was perceptible on back of plate. Please note defects and advise me how to avoid them in future. I cannot get a print. Nearly every one I make turns muddy and runs off the paper in the fixing bath. One remained until I immersed in alum and then ran off. The inclosed one is from the sample negative you sent me, which happened to stick, though it is worthless. Please give directions concerning the details of developing, etc. Please let me know the exact mode of washing, and how much is necessary; also, how shall I know when it has remained in the fixing bath long enough? And, above all, tell me how I can make the picture stick on the paper."

A.—The negative was received broken in small pieces; but it appears to be a good one. In regard to the paper print, you have very much over-exposed it: a mere flash in daylight is all that is necessary, and by gas or lamp light five seconds is sufficient. Use cold developers and fixing bath, together with alum, and the film will not leave the paper. Fix twelve minutes.

Views Caught with the Drop Shutter.

J. C. HOBBS, photographer, Medford, Wis., has been burned out. —*Picture and Art Trade.*

R. SWAIN GIFFORD'S painting, "Near the Coast," which received one of four prizes of $2,500 each at the recent New York Prize Fund Exhibition of the American Art Association, will remain in New York and become the property of the Metropolitan Museum.

WE have recently received a handsomely bound copy of the catalogue of T. H. McCollin & Co., of Philadelphia. This is well arranged and contains a large assortment of the goods of our publishers. The illustrations are neatly done, and interleaving of blank pages will be found very useful for memoranda.

INSTANTANEOUS (?) DRY-PLATE CRAZE.—A recent article in the May *Cornhill* tells us that "Breese & Blanchard many years ago accomplished the taking of instantaneous views, in which the effect of breaking waves on the beach and floating clouds were obtained," and that "in 1851 Talbot successfully photographed a page of print attached to a revolving wheel by the light of the electric spark from a Leyden jar, the duration of such a spark being less than the twenty-thousandth part of a second." This may be interesting to photographers who have the instantaneous dry-plate craze, and make such "tremendous shots," with, in a great many instances, such very extraordinary results.—*Manufacturers' Gazette.*

MR. W. F. DONNELLY has leased the premises lately occupied by Geo. A. Phelps at 851 Chapel street, New Haven, Conn. He has been for the past ten years actively engaged in photographic work with Mr. F. A. Bowman and others, and in the above gallery he proposes to do work of the highest standard.

DR. J. M. EDER has recently taken charge of the chemical department of a German dry-plate factory.

$50.00 REWARD!

The above reward is offered for the recovery of the goods and the arrest and conviction of the thief who stole from the exhibit of E. & H. T. Anthony & Co., at the New Orleans Exposition, the following articles:

One 5x8 Fairy Camera, complete, with six holders.

One B Platyscope lens.

One No. 3 E A Wide Angle View lens.

Together with sundry other articles of minor value.

The person who stole the goods is evidently a man of taste and able to appreciate a good thing when he *sees* it; but we would have preferred not to have him *seize* them until we had been consulted in the matter.

The fact that he selected the exhibit of E. & H. T. Anthony & Co. from which to purloin his outfit is sufficient evidence that the exhibit was the finest one made at the exposition, and speaks well for the quality of our goods.

THROUGH BY DAYLIGHT.

E. & H. T. Anthony & Co.

A special train will start on the 13th of July from Chicago for Buffalo. Tickets for the round trip, $10.

Smith, Gentilé & Douglass.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Sixth Annual Convention, Buffalo, N. Y.

Arrangements have been made with the Erie Railway Company for excursion tickets from New York to Niagara Falls and return, with privilege of stopping at Buffalo, at the rate of $5 for the round trip. Tickets good for fifteen days.

These tickets are now on hand, and quite a number have been secured by parties going to the Convention. Those who wish to take this opportunity of seeing Niagara Falls can obtain tickets by applying to

E. & H. T. Anthony & Co.,
No. 591 Broadway, N. Y.

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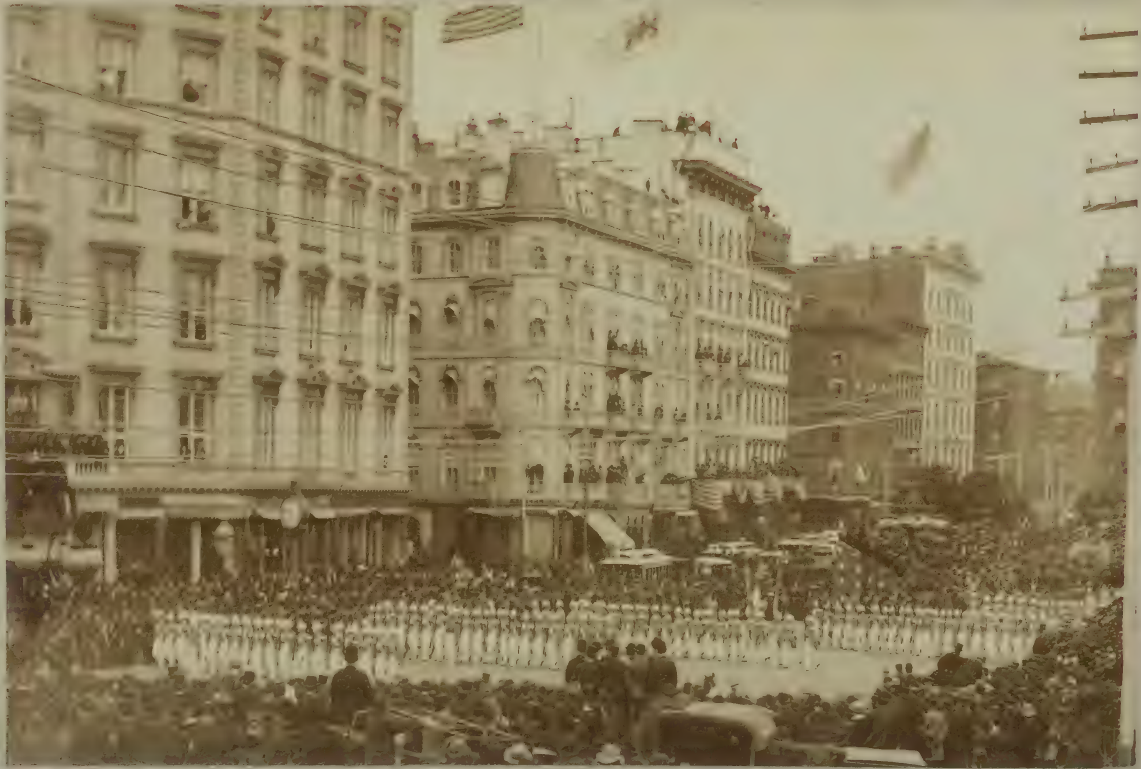

INSTANTANEOUS VIEW ON STANLEY DRY PLATE
WITH DALLMEYER RAPID RECT. LENS.

DECORATION DAY,
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Vol. XVI. SATURDAY, JULY 11, 1885. No. 13.

PHOTOGRAPHY IN COLOR.

The highly interesting article of Prof. Rood, in our last issue, calls attention to a phase of the subject of photography in color that must govern all experimental research in this direction. The learned professor is a peculiarly favored scientist in relation to the questions of art, color and photography. Being an artist by nature and inclination, as well as from much culture obtained abroad, he is particularly fitted to discuss the question under consideration from an artist's standpoint, and his remarks upon this phase of the subject are given with authority and mature judgment. In the science of color, he stands among the foremost of those who have by patient, experimental research given us our modern ideas about chromatics, and his interesting volume upon this department of physics stands alone to-day for completeness of exposition and beauty in the manner of presenting the subject. Added to these qualifications he brings a knowledge of the practical manipulative part of the photographic art, for he was one of those enthusiastic gentlemen that formed the Amateur Exchange Club, and which did such good work in the days when it took considerable skill to make a photographic picture.

When a gentleman with these qualities gives us his ideas upon a subject with which he is so well acquainted, we should be grateful for the time and trouble that he has devoted to the theme, and his remarks and suggestions should guide us in our experiments.

Prof. Rood's discussion of the difficulty of reproducing the multitudinous tints in a landscape are well stated, and indeed much better stated than we have ever seen them before. With the eye of a true artist, he sees in the landscape shades of color which, if reproduced in a picture, would not be agreeable to our eyes. The immense number of shades of simple colors found in nature are almost impossible of reproduction in a picture, and the photographer in color will have to be also an artist, that his work shall not be offensive to our æsthetic tastes. These thoughts need not damp the ardor of those who are experimenting in this direction, but rather should serve as a guide showing the direction that their researches should take. The effects of the wonderful modifications of the plant cells which produce the various colors of vegetation may, and doubtless will, be reproduced by the chemist in his laboratory; and if they can be thus produced, the photographer must place them upon his film in artistic combinations that will produce such harmony as will give a photograph in color the same value as a painting.

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ISOCHROMATIC PHOTOGRAPHY.

BY FRED. E. IVES.

In response to your invitation, I now give the following additional particulars of my process of Isochromatic Photography, a brief description of which you have reprinted from the *Journal of the Franklin Institute.*

The collodion emulsion with which the plates are prepared is made as follows:

Material for 20 ounces—

Alcohol	10 oz.
Ether	10 oz.
Bromide of Cadmium	220 gr.
Anthony's Green Label Cotton	140 gr.
Nitrate of Silver	300 gr.

Dissolve the bromide of cadmium in five ounces of the alcohol, then add the cotton and shake well. Add the ether, and then shake again until all the cotton is dissolved.

Grind the nitrate of silver in a glass mortar, and put it in a florence flask. Pour a small portion of the remaining five ounces of alcohol on the silver, and heat over an alcohol lamp (stirring briskly) until the alcohol is saturated with silver. Pour the silver solution into the collodion (do this in the dark room), and shake briskly for two minutes. Repeat the operation until all of the silver is in the collodion; then add the remainder of the alcohol, and proceed to test for free silver.

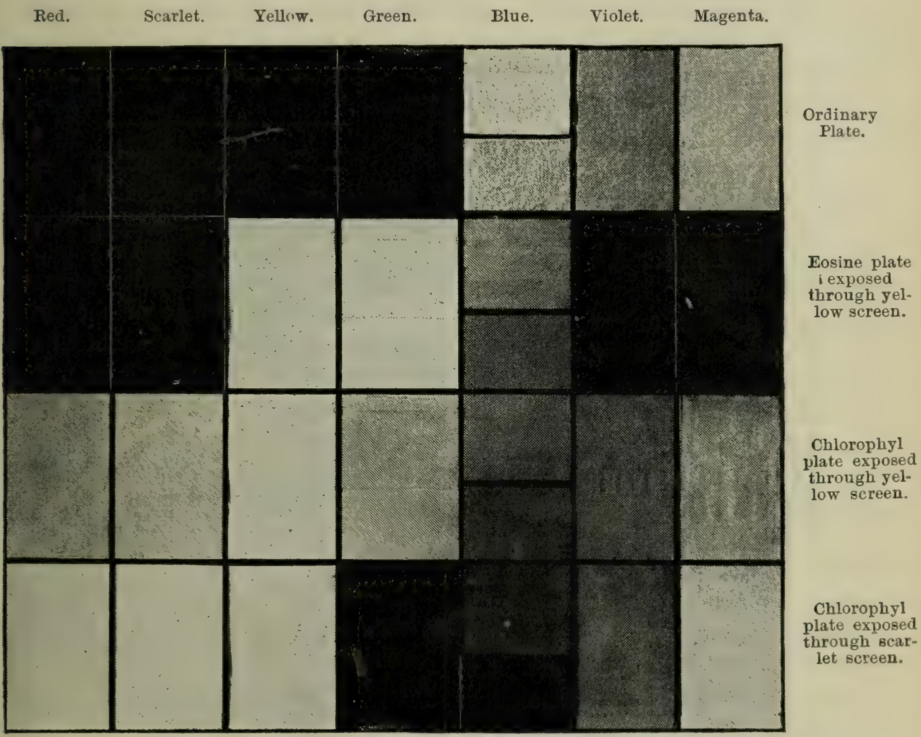
Pour a little of the emulsion on a glass, take it into white light, and put on a drop of a weak solution of bichromate of potash, which will produce a blood-red stain if the emulsion contains sufficient silver. The excess must then be neutralized by adding to the emulsion sufficient of a strong alcoholic solution of chloride of cobalt. Add a little at a time, until the bichromate test no longer produces a red stain, when the emulsion will be right. It should be kept in an amber glass bottle, in a light-tight box in the dark room. It will be fit to use the day after it is made, and will keep indefinitely. It should be shaken up about an hour before using.

The chlorophyl solution is made by cutting up fresh blue myrtle leaves, covering them with pure alcohol, and heating moderately hot. If it is desired to make a solution which will keep well, some powdered zinc or zinc shavings should be put in with the myrtle leaves before heating, to extract the chlorophyl. Both leaves and zinc should be left in the solution, and the bottle kept in a light-tight box. I have a bottle of this chlorophyl solution which is nearly a year old, and still works well, but the plates prepared with it require three or four times as much exposure as those prepared with a solution not more than forty-eight hours old. As the plates are comparatively insensitive at their best, a fresh chlorophyl solution should be used whenever it can be obtained.

Recently, I have found some other leaves, which yield chlorophyl equal to the blue-myrtle; but solutions from most kinds of leaves are not satisfactory.

To prepare the plates, flow with the emulsion, and when set cover for a few seconds with the chlorophyl solution, after which wash in running water until smooth. If it is desired to still further increase the sensitiveness, the plates may be placed in an infusion of black tea for a minute or two, and then washed again very thoroughly. These plates must be exposed while wet, and if more than ten minutes' exposure will be required, they should be flowed with concentrated glycerine, which will keep them moist for hours, without in any way injuriously affecting them.

A yellow screen for cutting off part of the blue and violet light must be placed in front of the lens, in contact with the lens mount. I now use films of gelatine colored with picric acid, and mounted with Canada balsam between two carefully selected pieces of thin plate glass; but, as it would not be easy for an inexperienced person to prepare a perfect color screen of this description, I recommend the lantern tank and weak solution of bichromate of potash, which I have already described.


Red.
Scarlet.
Yellow.
Green.
Blue.
Violet.
Magenta.
Ordinary Plate.
Eosine plate exposed through yellow screen.
Chlorophyl plate exposed through yellow screen.
Chlorophyl plate exposed through scarlet screen.

With a color screen of suitable intensity, and a rapid rectilinear lens, an exposure of one to ten minutes is sufficient to make a perfect negative of an oil painting in direct sunlight. The alkaline pyro developer may be used, with sufficient bromide to prevent fog. The negatives are apt to be thin, and, if very thin, may be successfully intensified with copper bromide and silver.

For the purpose of better illustrating the capabilities of my process, I have recently made a large number of photographs of a color scale, and I send you herewith a process block of some of the most interesting of them.

The color scale is made up of pieces of dyed woolen cloth, of the colors indicated, and the color screens were carefully selected by the aid of the spectroscope, in order that it might be known in each case what kind of light was transmitted.

The photographs tell their own story, so far as regards the relative capacity of the different processes.

In the course of my investigations I made some very interesting discoveries, which I have already announced at the last meeting of the Franklin Institute, as follows:

1. Although collodio-bromide emulsion plates stained with blue myrtle chlorophyl alone are capable of photographing all colored objects in the true proportions of their brightness, they are far more sensitive to the extreme dark red of the spectrum, below the absorption band of chlorophyl, than to either the orange, yellow or green.

2. All red, orange and yellow objects reflect the dark red light to which chlorophyl plates are so sensitive, and bright yellow objects reflect as much of this light as red ones. Yellow objects photograph lighter than red ones by this process, because they reflect two kinds of light to which the plates are sensitive, while red objects reflect only the one kind.

3. It is possible to greatly increase the sensitiveness of chlorophyl plates to spectrum yellow and green by treating them with the tea organifier, which also nearly doubles the general sensitiveness, but without appearing to alter the effect in photographs made through the yellow screen. If a green screen is used, of a shade which does not transmit the dark red of the spectrum, the resulting photograph is better when the tea organifier has been used, and does not then differ in any respect from one produced by exposing an eosine-stained plate through the same screen.

4. The dark red of the spectrum passes freely through a solution of chlorophyl, and through ruby and orange glass, but is absorbed by common green glass, or by a solution of Prussian blue or sulphate of copper.

The above facts show that plates prepared with both sensitizers, according to my original instructions, are, strictly speaking, more nearly isochromatic than those prepared with chlorophyl alone; but that in the production of photographs of colored objects they seldom offer any practical advantage except that of reducing the exposure about one-half, at the expense of some extra labor and care in their preparation and development.

It is also evident that the safest light in which to prepare and develop chlorophyl plates is neither ruby nor orange, but a deep orange-green, which may be obtained by using two thicknesses of deep orange glass and one of green. But it is important to avoid unnecessary exposure of the plates, even in this light.

MAKING LANTERN SLIDES.

BY A. B. BENJAMIN.

[Communication to the Society of Amateur Photographers, June 9, 1885.]

I REGARD the successful development of lantern slides as one of the most difficult and delicate things that I have as yet met with. Many subjects which make excellent silver prints fail to make good lantern slides. The formula which I use is slightly modified from that recommended by Mr. Carbutt, and I prefer to use his slow gelatino-albumen plates.

No. 1.

Water	32 ounces
Sulphate of iron	8 ounces

After filtering, add:

Sulphuric acid	40 minims

No. 2.

Water	32 ounces
Citrid acid	60 grains

After dissolving above, add:

Neutral oxalate potash	8 ounces

If the solution does not turn blue litmus paper faintly red, a trifle more critic acid is added, and when this is dissolved, add:

Citric acid	300 grains

Mr. Carbutt advises the following proportions for the developer:

Oxalate of potash solution	5 ounces
Iron solution	1 ounce
Bromide of potassium	6 grains

In respect to the use of the bromide,

I am governed altogether by the negative from which the slide is being made. If the negative has strong contrasts of light and shade I should not employ any bromide, as its retarding action in this case would unduly check the development of the high lights, and by the time they did appear the shadows of the transparency would be so dense as to be almost opaque. As a general precaution, however, I find it desirable to use a little bromide, as the development is under better control, and any slight over exposure may be easily corrected.

It will be noticed that the developer contains about all the iron it will retain without precipitation; hence, if by reason of under exposure the image fails to develop fully, nothing can be done to force the development, for if more iron is added a precipitate will be formed. On the other hand, if a longer exposure is given and the developer containing a bromide is poured upon the plate, there is some chance of saving the transparencies in case the bromide checks the development too much, by pouring it off and flowing with a fresh developer containing *no* bromide.

When the developer is used full strength as given, it is of vital importance to have the exposure exactly right, and this is very easily done when the copying camera is in the same place and a uniform light employed, either from the sun or a northern sky.

I find in reducing a 5 x 8 negative to 3¼ x 4, having the copying camera containing the negative placed within six inches of the window, and the latter protected by a piece of ground glass or white tissue paper, the sun's rays shining direct, or nearly so, upon it, an exposure of from five to seven seconds is sufficient for negatives of ordinary density. For a very thin negative I have reduced the time to cap on and off.

I prefer this latter exposure for negatives of such subjects as rocks, white stone buildings, steamboats, sailing vessels and rough water and marine views. In such cases I use the developer at its full strength, as I notice it yields what are called "black and white" tones, but which are actually more black and blue or black and very dark purple, such as is often seen in an ordinary silver print. For such objects as landscapes containing considerable foliage and grass, brownstone buildings, or those composed of the yellowish brick much used at the present time, I prefer a dilute developer, as I think it yields tones more in accordance with the subject. The exposure should be trebled, and the strength of the developer reduced one-half, putting in one grain of bromide to two ounces of solution, and picking out the plate when the development has proceeded far enough.

By commencing the development with a weak solution there is little need of ever losing a plate. My plan of proceeding is as follows: Suppose we have two ounces of developer, just half the normal strength in the tray, and in a graduate near by an ounce of the same, full strength; now this latter solution can be added, a little at a time, if necessary, to bring out the picture without danger of causing any immediate chemical change in the developer. I do not advocate using a developer that has been mixed over thirty minutes, as beyond that time the yellow precipitate begins to form, and though the developer appears to remain clear, there is a sprinkling of golden sand deposited on the surface of the plate, which, while it can be easily removed by a constant and rather violent agitation of the tray, is a movement that is really needless so long as the plate is well covered.

When a negative to be reduced is thick on one end and thin on the other, the thin portion can often be shaded with success. I have even thrown a handkerchief over the thin end and thereby obtained a more even illumination.

Until some better light is provided, it will be necessary to make a double set of slides for home exhibitions, one suited for oil and the other for the lime light. I have some subjects that I cannot develop thin enough for oil, and retain any pluck; yet if the development is continued, the transparency becomes practically worthless.

I employ two cameras facing each other; in one the negative to be reduced is placed in a kit in the space occupied by the plate-holder, and the lens front is removed. The lens of the copying is inserted in this aperture, and the space between the two cameras covered by a black cloth; this plan I find works very successfully and avoids the necessity of using a copying camera. In focusing I employ a magnifying glass. The making of lantern slides is to me extremely fascinating, and if I have imparted any information which can be utilized by others, I shall feel that my experience has not been in vain.

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[*From the Photographic News*]

THE TREATMENT OF UNMOUNTED PRINTS ON ALBUMENIZED PAPER.

To the professional photographer who sends out large numbers of unmounted prints, it is a simple enough matter to so flatten them that they will be quite manageable, showing no inclination to curl up inconveniently. It pays him to have a large press, with roller and hot plate, and he simply passes the prints through this.

With the amateur photographer the matter is in most cases very different. He cannot, especially if he work a large size, afford to purchase a rolling machine to pass his prints through, and he is often irritated beyond measure by the condition which they assume when they have dried, especially if the paper have a high surface. They are found to have curled themselves up with the albumenized side inward, sometimes into a little roll no thicker than a lead pencil, and any effort to unroll them usually results in tearing the paper, and always in a deterioration of the surface by the cracking of the albumen film.

Ordinary single albumenized paper does not curl up in such a totally unmanageable manner as does the very high surface double albumenized paper now frequently used, but still it is very troublesome. The prints, if they are allowed to curl up, may be flattened in one or two ways. The first and most popular is by laying them face downward on a pad of blotting paper, or some similar material, and passing a hot iron carefully over the back. With small prints this treatment is usually quite satisfactory. With large prints, unless the amateur have the skill of a fairly expert laundress, he is certain to cause folds and wrinkles in the paper which can never be eradicated. Moreover, he is liable by the slightest overheating of the iron to turn the whites of the pictures into yellow.

The second method is that of passing a blunt paper cutter over the back of the print while it is laid face downward on a soft pad. This method has the objection that it is almost certain to crack the albumen film to a greater or lesser degree.

By far the best way of treating prints which are not intended to be mounted is, in our opinion, to so dry and treat them that they are never permitted to roll up. There are various ways of doing this. If prints be allowed to drain for a few minutes, and then be laid between sheets of blotting paper—

or, still better, between drying boards, which are simply very thick sheets of blotting paper with a smooth surface—if the sheets be piled one on the top of the other with a weight over all, and if the whole arrangement be allowed to stand for a few days, the prints will at the end of that time be found to be dry, and will have but little inclination to curl up.

A method which we prefer is the following: The prints are removed one by one from the washing water, each being allowed to drain till water ceases to drip from it. It is now blotted off with white blotting paper, which ought to be that which is made specially for photographic purposes, and which is guaranteed to be free from hyposulphite of soda.

The print, when it is blotted surface dry, is laid face downward on clean blotting paper. The albumenized surface being downward, the weight of the paper restrains the inclination that there is for the edges to curl inward, and the prints may be allowed to get very nearly dry without curling into a condition at all unmanageable. When they are very nearly quite dry—which is indicated by their beginning to curl stiffly inward at the edges in spite of their lying face downward—they are piled one on the top of the other, on blotting paper or anything else intervening between them. A weight is laid on the top of the pile, and it is left for several hours or any longer time. If the prints be on single albumenized paper, they will without further treatment have been sufficiently flattened. Double albumenized paper is, however, very obstinate, and requires something more than merely lying flat under a weight.

A thin wooden roller is taken—one about an inch in diameter is suitable—on to this, one of the prints is rolled, albumenized side outward; the end of the print is caused to overlap the beginning of a second one by half an inch or so, and then the latter is rolled up till it overlaps and catches a third, and so on. By this means a far tighter roll of prints can be made than by rolling them as they lie one on the top of another. The prints are allowed to remain rolled up for a day or more, when, if once laid out flat, they will remain so.

OUR PICTURE GALLERY.

We have recently seen some negatives of instantaneous subjects made on Stanley plates with an oxalate of potash and iron developer, that are better than anything upon the same plates developed with pyro. They are clean, full of detail of the finest character, and brilliant beyond description. These negatives are the work of Dr. J. J. Higgins, of New York, and the subjects are mostly the large river and sound steamers that leave New York between 5 and 7 o'clock in the evening, at which time the exposures were made. Dr. Higgins has kindly consented to let us have an article giving his method of developing, and will also let us illustrate the Bulletin, at some future date, with prints from these beautiful negatives.

A valuable addition to our album comes in the shape of some gems in views from Mr. Dumont, of Rochester. With an artist's eye, the choice of position in each case has been most carefully made, and as a result we have a set of pictures full of the most charming effects. We have eleven prints—6½ x 8½—with subjects that include the most artistic effects in architectural, landscape, marine and woodland scenery, including ice and snow scenes of uncommon beauty. We consider these prints quite an acquisition, and hope Mr. Dumont will remember us again.

Our gallery has recently obtained several life-sized heads, donated by Messrs. **Moreno & Lopez**, of New York. These are among the best examples of this class of work, and in artistic pose and fine finish are surpassed by none.

Antonio Moreno was born in Vera Cruz, Mexico, in 1849, and studied under his father, who was a teacher for fifty years. From an early age he showed a fondness for painting. He used to watch his father's photographic experiments, and Mr. A. G. Alexander, an American, taught him some photography. After more than a year's practice he established himself in Vera Cruz. where he lived ten years. As he was becoming deaf, he came to New York in the hope of being cured. Two years and a half ago he established himself in this city, in connection with Mr. Lopez; and, beginning with three employees, has gradually increased to thirteen very busy ones to-day. Mr. Moreno attends to the posing, takes the pictures, and developes the plates. He is the inventor of a process for producing before the photographed person the impression of clouds, fire, water, etc., for which he had obtained a patent. He is very frank, and always ready to converse on his experience, and, thanks to his activity, his business is increasing and his house has a good prospect.

Prof. **Forbes**, of Rochester, sends us a very good picture of a horse and wagon taken on a 5 x 7 plate, with a 4 x 5 Dallmeyer R. R. lens. The work is excellent and one of the best pieces we have seen with this lens.

Emilio Reinoso has given us a negative and a print from the same of a sugar plantation and sugar works in the Tropics. The negative is a large one, 11 x 14, and very well done on an Eastman Tropical Plate with a Dallmayer lens, the development being ferrous oxalate; time ½ second. The print is not good; it has a cold, dull tone that is certainly anything but tropical.

From J. A. **Palmer** we have received a number of stereoscopic views of South Carolina scenes, which are very good, more especially the pictures of the colored people in the cotton fields. The group of colored children in the porch is uncommonly true to life.

An unusually interesting stereoscopic print comes from Mr. W. H. **Kibbe**, in the shape of a view of a woodcock nesting. We have never heard of such a photographic feat before, and we are very much pleased to get this highly interesting print. Mr. Kibbe also sends a cabinet print of a little boy posing in sailor dress in the rigging of a ship—a picture at once artistic and well done.

Mr. J. S. **Mitchell** sends a cabinet of a little subject upon a bicycle, with two dogs, that makes quite an effective group. The ribbon around the neck of the pug looks too low down, to our taste.

Beatty & Crandall have sent us an excellent cabinet example of their work. We are pleased to notice work so well done and so neatly finished. The work on the negative is of a fine character, and the print is of the highest order, with a very pleasant tone.

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June 3, 1885.

Gentlemen—I have not received No. 9 of the Bulletin for this year; can you send me one?

I have not been a subscriber to the journal for the last few years, and regret it. A friend on his way from Japan to San Francisco lent me the numbers of 1882, 3 and 4, and I find I have missed a great deal, although I take all the other journals. Can you furnish me the numbers for 1884, illustrated, either bound or in the common-sense binder? Please let me know.

Yours, Geo. N. Moore.

ON TO BUFFALO, JULY 14-18.

If there is anybody that does not have a good time and learn a great deal at the coming Convention, it will be his own fault. The officers of the Association have worked nobly to provide hosts of good things for the pleasure and instruction of the visiting photographers They have verily gathered material from the four corners of the earth, and there will be heard and seen at Buffalo the instruction and examples of the work of those who are thousands of miles apart, but yet have that noble feeling of all true artists, the love of the photographic art for its own sake, independent of country and personal feeling.

When we look over the programme which we gave in our last issue and repeat below, we anticipate for ourselves a perfect photographic feast. Who are better able than such men as J. Landy, H. McMichael, W. A. Armstrong, C. Gentile, Dr. Wilson, J. F. Ryder, J. L. Hurd, J. Burton, Dr. Garrison, W. H. Potter, J. Traill Taylor, G. M. Carlisle and G. A. Douglass to give us the best that America affords. And added to this galaxy of photographic stars we are to have Col. Stuart Wortley, H. P. Robinson and W. M. Ashman, of England—men too well known and admired to need any praise from us, and whose thoughts are always worthy of the deepest attention.

Added to the purely intellectual part of the programme is to be the splendid display of apparatus and examples of the photographic art gathered from both hemispheres.

As the time draws near for our departure to this rich exposition of the art and science of photography, we feel more anxious to get away and enjoy it. We hope to meet our many friends there, and it will go hard with us if we do not add considerably to their number.

On the same day that the Convention meets at Niagara Falls the citizens of Niagara Falls, together with the State Commissioners, will formally open the State Reservation of Niagara Falls Park, and this will lend additional interest to the visit.

PROGRAMME.

SIXTH ANNUAL CONVENTION, JULY 14 TO 18, INCLUSIVE.

To be held in New State Arsenal, Buffalo, N. Y.

TUESDAY, JULY 14.

Morning Session, 10 o'clock:

Address of Welcome, by *Secretary* McMICHAEL.

Address and Opening of the Convention, by the *President.*

Roll Call of Members.

Report of Standing Committees, consisting of Chairman of Executive Committee, by W. A. ARMSTRONG, and Progress of Photography, by C. GENTILE.

Appointing Committees to nominate Officers and to select Location for next Convention.

Miscellaneous Business.

Annual Report of the President, consisting of a Review of the Progress, Needs and Benefits of Photography.

Afternoon Session, 2 o'clock:

Paper by E. L. WILSON, Philadelphia, Pa.: "The Dignity of Photographic Art."

Discussion: "The Deterioration of Gelatine Dry Plates."

Paper by J. F. RYDER, Cleveland, Ohio: "How to See."

Discussion: "The Best Method of Lighting the Dark Room."

Paper by J. L. HURD, Providence, R. I.: "Photographic Portraits *vs.* Camera Pictures."

Paper by J. BURTON: "Development."

Wednesday, July 15.

Morning Session, 10 o'clock:

Business Meeting.

Reports of Committees: Nominating and Locating.

New Business.

Excursion to Niagara Falls, 2 o'clock.

Thursday, July 16.

Morning Session, 10 o'clock:

Business Meeting.

Reports of Committees.

New Business.

Afternoon Session, 2 o'clock:

Lecture by Dr. Garrison, Chicago: "Dry Plates."

Paper by W. H. Potter, Indianapolis, Ind.: "Handling and Developing Dry Plates."

Opening of Question Box.

Paper by J. Traill Taylor, New York: "Certain Defects Incident to the Construction and Use of Combination Lenses."

Paper by W. A. Armstrong, Milwaukee, Wis.: "Our Mistakes; let us Correct them."

Paper by Col. Stuart Wortley, England.

Friday, July 17.

Morning Session, 10 o'clock:

Business Meeting.

Reports of Committees.

Election of Officers.

Selection of Location for next Convention.

Afternoon Session 2 o'clock:

Paper by J. Landy, Cincinnati, Ohio; "Prices."

Paper by H. P. Robinson, Tunbridge Wells, England.

Paper by G. M. Carlisle, Providence, R. I.: "Backgrounds, their Use and Abuse."

Paper by W. M. Ashman: "Portable Support for Washing Plates."

Discussion of Prices.

Paper by G. A. Douglass, Chicago.

Saturday, July 18.

Morning Session, 10 o'clock:

Unfinished Business.

Closing Ceremonies.

PHOTO EXHIBIT FOR CONVENTION.

Mr. Winters, Syracuse, N. Y., 200 sq. ft.
Frank Robbins, Oil City, Pa., 150 "
Mr. Clark, Indianapolis, Ind., 100 "
Mr. Potter, " " 100 "
W. A. Armstrong, Milw'k'e, Wis., 150 "

David Samult, Philadelphia, Pa., large collection of porcelains finished in oil.

A. G. Marshall, Canandaigua, N. Y., 50 square feet.

H. F. Nelson & Co., twenty-five (16 x 19) views of Niagara Falls.

G. A. Douglass, Chicago, Ill., large collection of photos.

J. F. Ryder, Cleveland, O., large collection of photos.

S. Wardlaw, Rochester, N. Y., 200 square feet.

Geo. Baker, views of Niagara Falls; wants 360 square feet.

Sarony, New York, large collection of his celebrated studies.

J. Landy, Cincinnati, large collection.

G. Cramer, St. Louis, 700 square feet.

Gurin, St. Louis, 360 square feet.

Pearsall, Brooklyn, N. Y., large collection.

Kent, Rochester, N. Y., large collection.

H. McMichael, Buffalo, N. Y., 400 square feet.

Sholton, St. Louis, 360 square feet.

Benecke, St. Louis, 360 square feet.

Nier & Wettlin, Rochester, five life-size heads.

Large collection from France.

Secretary H. McMichael has just received word from Germany that the following exhibits are promised for the coming Photographic Convention from the following firms:

I.—Franz Hanfstangl, Munich.
Kunstanstalt and pigment papier fabrik.
One fac-simile fabrik Klosterhecht.
One imperial fabrik Prosit.
Ten portraits, all made in carbon prints.

II.—Th. Creifelds, Cologne.
Photographische and Lichtdruck Anstalt.
Five large size photographs, silver prints, negatives made on gelatine dry plates.

Five boudoirs, Lichtdruck process negatives, made on Fanen collodion dry plates.

III.—Paul Schmidt, Frankfurt.

Four 18 x 22 figures.
One 18 x 22 large head.
One group large Tyrolen Kirmess (own composition).
Four boudoir pictures.
Ten cabinets.

IV.—P. Müller, Munich.

One lot of pictures (not specified).

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OUR PUBLISHERS' PRIZES AT BUFFALO.

THE prizes offered by our publishers for pictures made from Stanley plates continue to prove very interesting to photographers, if we may judge from the number of inquiries that are made about the conditions of the competition. We have seen some of the pictures to be entered in this competition, and believe the scheme will bring out some uncommonly fine photographic work. We think this method of drawing out the best efforts of our brethren is an excellent one and should be entered into by all who are interested in developing the best efforts in photographic art. The spirit of emulation that it calls forth and the generous rivalry of the competitors are entirely in the spirit of true artists, and must necessarily elevate the professional status of our fraternity. We repeat below the conditions of the competition, and every effort is being made that the prizes shall be worthy of the winners. They will be exhibited at Buffalo.

PRIZES.

One No. 17 B Climax Portrait Camera, double swing, telescopic bed and Benster holder, 20 x 24, value $97; for the best collection of large photographs (portrait work), not smaller than 14 x 17, made on the Stanley Dry Plate, and printed on the N. P. A. Albumen paper.

One 5 x 8 Fairy Camera, with six holders, Fairy Tripod and carrying case, value $60; for the best collection of cabinet photographs, made on the Stanley Dry Plate, and printed on the N. P. A. Albumen paper, negatives, if desired, to be loaned to us for illustrating ANTHONY'S PHOTOGRAPHIC BULLETIN.

Exhibits may be shown framed or unframed.

Each exhibit must have a card attached, stating "Negatives made on Stanley Plate and printed on N. P. A. Albumen paper," and giving name of exhibitor.

The prizes will be awarded on the second day of the Convention by a committee of three disinterested photographers, and delivered as soon as the Convention closes.

All competitors for the above will please notify us of their intention to compete at least ten days before the Convention meets.

E. & H. T. ANTHONY & Co.

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ROUND-TRIP TICKETS TO NIAGARA AND BUFFALO.

THE first lot of these tickets have been taken, and the second batch are now being sold. If any of our readers are not already provided for, they should write at once to our publishers, and on receipt of the money the tickets will be sent by return mail. Don't wait; time is getting short, and every one must be on the road next Monday, to be present at the opening of the Convention.

We are glad so many of our Eastern brethren are going to meet their Western confreres at Buffalo; and we assure them of a true and hearty greeting in the Queen City of the Lakes.

The following is the arrangement made by our publishers in regard to round-trip tickets:

Sixth Annual Convention, Buffalo, N. Y.

Arrangements have been made with the Erie Railway Company for excursion tickets from New York to Niagara Falls and return, with privilege of stopping at Buffalo, at the rate of $5 for the round trip. Tickets good for fifteen days.

These tickets are now on hand, and quite a number have been secured by parties going to the Convention. Those who wish to take this opportunity of seeing Niagara Falls can obtain tickets by applying to

E, & H. T. Anthony & Co.,
No. 591 Broadway, N. Y.

ST. LOUIS TO BUFFALO.

ARRANGEMENTS FOR ROUND TRIP.

Arrangements have been made with the Popular Bee Line Route for transportation of Photographers to the Sixth Annual Meeting of the Photographers' Association, to be held at Buffalo, N. Y., July 14, at the low rate of $15.00 from St. Louis to Buffalo and return. Tickets good going on any regular train from July 12 to 14, inclusive, and to return until July 31. Should the number going at one time be sufficient to require it, an elegant palace sleeping car will be placed at their disposal. Sleeping car tickets, $4.00 extra.

Having succeeded in obtaining these liberal rates from the Bee Line, it is hoped those wishing to go will join the committee in their efforts to secure as large an attendance as possible. We are further assured that should any lower rates be made on this occasion, we shall have the benefit of them.

It is desired by the committee that an early response be made by those going, and to this end please write and send the money to either J. C. Somerville, 1009 Olive street, or H. A. Hyatt, corner Eighth and Locust streets, who will procure tickets and mail in ample time, or hold subject to your order. The main body will leave Sunday, July 12, at 7 P. M. Any further information desired will be cheerfully furnished by the committee.

Mrs. J. H. Fitzgibbons,
G. Cramer,
R. Benecke,
J. C. Somerville,
H. A. Hyatt,
Committee.

VIEWS ABROAD.

In a recent meeting of the *Society for the Advancement of Photography* in Berlin, Mr. Scolik reports about his experiments with isochromatic plates. He has found that Vogel's azaline plates surpass other plates at present in the market in regard to red sensitiveness. He speaks favorably also of the aurantia-collodion plates, necessary for color sensitive views.

Mr. Quidde, who has used these plates for some time, recommends them very much. But he takes a weaker colorative than Dr. Vogel, which tends very much to shorten the time of exposure. He advises never to leave out the yellow plate when working with azaline plates, even when the original seems to be without blue or violet, as in this respect the human eye did not seem to be sufficiently reliable.

Mr. Haberlandt speaks about the developing of gelatine plates with a preliminary bath of hypo-sulphite of soda. He remarks, it is generally admitted that if a plate is immersed in a weak solution of hypo immediately before developing the same with oxalate of iron, the image would appear at once, and with all details; but if finally after finishing the development, a remarkable difference could be observed; and was doubtful as many were of the opinion, that the same details could be obtained by sufficiently long development. To try this he put only *part* of a plate in a solution of hypo 1:3000, and then developed; the difference between both parts of the plate was plainly visible. The same experiment with a second plate gave the same result. The parts treated with hypo seemed to be more advanced, and looked as if the plate had been exposed longer. This would show that plates treated with hypo needed a considerably shorter exposure. The question is, if the parts treated with hypo would not have given the results and details under longer development? But it is certain that the application of the hypo bath reduces the contrast between light and shade, accelerates the development, and that by continuing the same strong negatives are obtained.

Dr. H. W. Vogel cautions against a too strong hypo solution, as it has a tendency to green fog. A solution of 1:3000 was, according to his opinion, too strong. A solution of 1:5000—even 1:10,000—would be sufficient, and he generally left the plate in the same for the time he required to mix his developer.

The view was so expressed, that in such a weak solution as 1:10,000 the hypo could have hardly a sufficient action, and that water might here do more than the former, softening the film and preparing it for the developer.

Dr. H. W. Vogel is of a different opinion, based upon his own experience. He has placed plates in distilled water before development, and obtained thereby a more easy and even flowing of the developer, but of the characteristic action of the hypo, as is seen even in a solution of only 1:10,000, he had observed nothing.

Regarding the reduction of too intense gelatine plates with red prussiate of potassium, a fixing bath is colored slightly with this ingredient, and the plate, after leaving the fixing bath, is placed into the same unwashed. It will reduce them with great regularity, while the solution discolors. Washing afterward as usual.

IN the *Journal de L'Industrie Photographique* we note the following method for developing platinotypes, by Prof. L. Borlinetto: In one liter of distilled water dissolve perfectly three hundred grams of neutral oxalate of potassium; then add ten grams of oxalic acid. When solution is complete, add one hundred cubic centimeters of a saturated solution of copper chloride, and shake the mixture. Allow to stand, and if crystals form in the bottle containing the solution it is of no consequence, To use the solution, heat in a porcelain dish to about 80° C. Transfer to a bath, and immediately place in it the exposed proof, which will take a fine sepia tint in a few moments. The tone will vary according to the temperature of the oxalate solution. The image is washed in weak hydrochloric acid as usual, and then in pure water. After some time place in a solution of sulphate of iron of five per cent., then into water weakly acidulated with sulphuric acid, and finally wash with a large quantity of pure water. These platinum images resist the action of sulphuric, nitric, hydrochloric and hydrofluoric acids.

IN *Le Moniteur de la Photographie* we see that a statue of Nicephore Niépce has been erected at Chalon-sur-Saone. The work was executed by M. Guillaume, of the Institute. In the same issue is a notice of the death of M. Jean Berthaud, honorary president of the Chambre Syndicale de la Photographie. He was a well-known and much-respected member of the French photographic world, and was sixty-six years old.

AT a recent meeting of the *Société Francaise de Photographie* M. Audra called attention to a curious result obtained while taking an instantaneous picture. He found that when he developed the plate a part of the image was double. He explained this by describing his shutter, which was one of those with two vanes passing rapidly before one another. As one image was only partially complete, it was due to the rebounding of the shutter and an uncovering of a part of the lens for an instant.

IDENTITY in life is often established by means of photographs. A case of identity, after death, being established in the same way, recently came before Mr. Justice Kay. Two years ago a Bristol auctioneer shot himself in Spain, where he was traveling under an assumed name. Proper evidence of death under the circumstances became a somewhat difficult matter. But a photograph of the deceased was identified by a gentleman who was traveling with him; and this fact, coupled with the production of certain recognized trinkets and linen marked with the correct initials, satisfied the judge as to the evidence of death.—*Amateur Photographer.*

THE claim of J. H. Schulze to be called the "discoverer of photography" rests on the fact that in 1727 he obtained copies of writing by placing the letters to be copied upon a white surface of chalk mixed with nitrate of silver, and exposing the whole to sunlight. The translucent paper permitted the light to pass through and blacken the silver nitrate; but the ink forming the written characters protected the surface beneath them, so that the writing was reproduced in white upon a black ground.—*Cornhill Magazine.*

THE subject of Isochromatic Photography lends considerable interest to a paper recently read before the Royal Society by Mr. Edward Schunck, F. R. S., treating of the action of acids upon chlorophyl, and detailing reactions which will throw light upon the composition of Mr. Ives' solution, and, perhaps, enable more precise experiments to be made in the direction he indicates. The action of acids upon chlorophyl solution has an effect which will be of importance in this connection, as it produces an absorption spectrum which is different from that of the unaltered substance. When a current of hydrochloic acid gas is passed into a solution of chlorophyl, a dark green, almost black, precipitate is quickly produced, consisting of two important bodies, the only one of which, phyllocganin, is dealt with in the paper. It is obtained by digesting the mass of precipitate with ether, and then adding strong hydrochloric acid; the mixture separates into two layers, the substance in question being formed in the lower. It forms a dark blue mass, which may be raised to 160° without decomposition. "It is insoluble in water, petroleum ether, and ligroin, but dissolves in alcohol, ether, chloroform and glacial acetic acid," a minute quantity imparting an intense color to any of these solvents, and showing the familiar spectrum of acid chlorophyl. Further, it exhibits a remarkable degree of permanence as compared with chlorophyl, when exposed to the combined action of air and light. Dissolved in various acids it gives different spectra. Zinc oxide added to acetic acid solution causes an intense green coloration; the same happens with oxide of silver and other metallic oxides. It is highly probable that Mr. Ives' solution bears a close relation to this last described, and, not to go into greater details here, it is evident that valuable information is given in Mr. Schunck's paper for any one who wishes to experiment in isochromatic photography as aided by chlorophyl.—*British Jour. of Photography.*

EVERY ONE, be he traveler, explorer, special correspondent, scientist, or what not, now includes a photographic apparatus among his *impedimenta;* and ere long a critical public will not be satisfied if the story of his doings, which each of these has to tell on his return, is not copiously illustrated with photographs taken *en route.* It will soon be quite useless for a traveler to use the long-bow; for he would be expected to duly produce negatives of everything that he has shot with it. Descriptions of hairy men monsters, such as Paul du Chaillu brought back from Africa, will be laughed at, if confirmatory cartes are not exhibited. Exploring, thanks to photography, will be transformed into an exact science.—*Photo. News.*

UNDER the heading of "Caprices in Stationery," an organ of the printing trade notes that a fashion has sprung up among the wealthy to have their country seats photographed, and a print placed upon their letter paper instead of the address. After all, this is but a revival of the old-fashioned note paper, which used to be sold at the principal watering places, containing some favorite view. These pictures were always strangely unlike the originals; but, as the printer always took the precaution to put the names underneath, no mistake could be made.—*Photo. News.*

ASSOCIATION OF OPERATIVE PHOTOGRAPHERS.

392 BOWERY,
June 3, 1885.

President POWER in the chair.

The Secretary was directed to communicate with the various stock houses, with a view of placing bulletin-boards in them, on which applications for help could be posted, when they could not be filled from the Association.

Mr. EDDOWES—I would like to ask the retouchers present what kind of leads they use, and why they prefer them?

Mr. ACKER—I use the metallic leads almost entirely. Some say that the metallic lead oxidizes, but I have seen negatives retouched with it six years ago and have never noticed any oxidation.

Mr. FAULKNER—Is it customary to retouch dry plates before or after varnishing?

Mr. SCHAIDNER—I use graphite leads entirely, and find they answer every purpose both for wet and dry plates. I use a six H lead. I retouch my dry plates before varnishing, as I think this plan gives me a softer effect. If the face is very rough I can retouch it again after varnishing, and so make sure of getting it smooth. I find that metallic leads, if soft, lose their point, and if hard do not cover enough.

Mr. BUHLER—While I was at Sarony's, some years ago, they used Siberian leads, using nothing on the negative to make the pencil take, and the effect was much nicer than where the surface of the varnish was prepared.

Mr. SCHAIDNER—If it is a very rough face the negative cannot be varnished so the lead will take properly without preparing the surface. For this purpose I find nothing so good as pumice stone. If you get too much lead on, you can grind it off again. If the freckles are deep, you must prepare the surface in some way.

Mr. ACKER—I have retouched without preparing the surface of the varnish, and found that it gave a hard effect. I prefer to use pumice stone; don't care for balsam of fir or turpentine, as they are sometimes slippery and sometimes "take" too much.

Mr. BUHLER—A negative that has had pumice stone used on it will show the application in solar prints.

Mr. ACKER—I can grind a nega ive with pumice stone so no lines will show outside of the face. Of course, the grinding intensifies the negative, and the fine scratches show plainer when enlarged.

Mr. EDDOWES—When retouching, I used to inclose my pumice in two thicknesses of muslin and sift it on the negative, grinding with an old lead pencil eraser. In this way I could take the oily surface from the varnish and scarcely show the application of the pumice stone.

Mr. ACKER—If your pumice is so coarse that you have to sift it, it is better to get a new lot. I do not like the rubber, as you never have the same feeling as when you apply the pumice with your finger.

Mr. SCHAIDNER—It is hard to get fine pumice stone; but if you put your pumice in a quantity of water, shake well and let stand for five minutes, the coarse particles will settle to the bottom, while the finer will be held in mechanical suspension; decant the water through a filtering paper and add more water to the pumice stone, shaking up as before, etc., repeating the operation two or three times; then dry the pumice that is left on the filter and you will have it as fine as it is possible to get it.

Mr. EDDOWES—A great objection to turpentine and balsam of fir is, that the dust sticks to them, and, as a consequence, dirty prints result.

Mr. ACKER—Turpentine and Venetian turpentine mixed in equal parts have not the sticky properties of balsam of fir.

Mr. SCHAIDNER—I find that the more I heat my negatives the harder and more glossy the varnish becomes, and the more difficult to retouch without preparing.

Mr. FAULKNER—I have heard that if the negative was chilled a little while varnishing, it could be retouched without preparing the surface.

Mr. POWER—By chilling the varnish you kill the printing qualities of the negative.

Mr. ACKER—Heating the negative after varnishing has a great deal to do with the "taking" qualities of the varnish. If the negative is overheated and you attempt to use the needle, the varnish will chip off. A little water added to the varnish gives a slightly chilled effect and enables you to retouch without preparing the surface.

Mr. FAULKNER—I understand that if a little collodion is added to the varnish it will have the same effect.

Mr. BUHLER—By adding collodion you make ground glass varnish.

Mr. POWER—Yesterday I took a pound of silver and made it into stock solution. I tested with litmus paper and found it very acid. To-day I test the same solution and found it alkaline. Can any one acccunt for the change?

Mr. FAULKNER—I have had a similar experience, and attribute it to the action of light.

Mr. POWER—The solution was in my darkroom.

Mr. MILDENBERGER—I test my bath to-day after silvering, and it shows acid; to-morrow, although I do not use the bath, it tests more acid.

Mr. BUHLER—I do not think it possible to give an explanation unless a chemist takes the silver and examines it.

The various journals were received, with thanks of the Association.

W. EDDOWES,
Secretary.

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June 17, 1885.

GENTLEMEN—Your BULLETIN of June 13 came duly to hand. I have seen and read the BULLETIN when it was a monthly, though I was never a subscriber.

If this number is an average of your semimonthly issue, you may count on me as a lifelong subscriber.

If you continue to give as much photographic information for the money, you ought to secure a large increase in subscribers. Can I get the back numbers for this year?

Very truly yours, JOHN C. PATRICK.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

A REGULAR meeting of this Society was held at their rooms, 1260 Broadway, Tuesday evening, June 9, the PRESIDENT in the chair.

The CHAIRMAN announced an excursion up the Hudson for the next day, and invited members to join; also the plan of another later in the month, when it is proposed to charter a tug for a trip around the harbor, which will give a chance for shutter work.

The SECRETARY read part of a letter from D. T. Kendrick, concerning the advisability of compressing different chemicals into tablets, like chlorate of potash lozenges; also a letter from E. & H. T. Anthony, accompanying the gift to the Society of seven prints, taken on Decoration Day, with a Prosch shutter upon Stanley Plates.

These pictures were much admired by the members. The day when they were taken was overcast; but the sharpness of the work, and the wonderfully clear instantaneous effects, received many commendations by those present.

Also a telegram from the Secretary of State of New York, stating that the incorporation papers had been filed that morning.

A synopsis of the minutes of the previous meeting was read and adopted.

Messrs. H. G. Piffard, William H. Sanford, J. L. Williams, M. D.; George H. Cook and A. H. Borman were elected active members.

The report of the Executive Committee was then read by the SECRETARY, as follows:

REPORT OF THE EXECUTIVE COMMITTEE.

In accordance with the resolution passed at the regular meeting of May 14, 1885, instructing this committee to co-operate with the Committee on Incorporation, and also authorizing it to prepare a revised constitution to be in harmony with the change necessitated by incorporation, we have to report that the matter has undergone careful consideration, and we herewith present for your attention a copy of the constitution as revised.

It has been the object of the committee to widen the scope of the Society and to provide different classes of membership, which it is hoped will accommodate amateurs in varying circumstances, and thus enable all who are worthy to become members.

The committee has also borne in mind the need of separating the business of the Society from the general meetings, in order that more time may be given to the discussion of topics relating to photography, and to this end a Board of Directors has been established, who will be responsible for the business affairs of the Society and for its proper management.

Proper precautions have been inserted to have fair elections and to meet any ordinary emergency which may arise.

We approve the measure as presented, and ask that we may be discharged from its further consideration.

Respectfully,
[Signed] H. J. NEWTON, *Chairman.*
R. A. C. SMITH.
GEORGE H. RIPLEY.

NEW YORK, June 9, 1885.

On motion of Dr. JANEWAY, the report was accepted and the committee discharged, and consideration of the report postponed till later in the evening.

REPORT OF THE COMMITTEE ON INCORPORATION.

In pursuance of the power conferred upon this committee by the resolution passed at the meeting of May 14, wherein we were instructed to have this Society incorporated, as suggested in our last report, and also to co-operate with the Executive Committee on the revision of the constitution, we have to report that we have this day received notice from our attorney and from the Secretary of State, Jas. B. Carr, at Albany, N. Y., that the certificate of incorporation has been officially filed and recorded in the City, County and State of New York, as required by law. The Society is therefore incorporated.

The following are the names of the incorporators: F. C. Beach, Dr. John H. Janeway, Chas. W. Canfield, Joseph S. Rich, Geo. H. Ripley, Robt. A. C. Smith, Gilbert A. Robertson, Dexter H. Walker and Chas. Volney King.

In addition to the above-named gentlemen, Messrs. Chas. W. Dean and Henry V. Parsell, making eleven in all, have signified their willingness to assume the responsibilities of Directors for the first year.

The object for which this committee was appointed having been accomplished, we ask that it be discharged.

Respectfully,
F. C. BEACH, *Chairman.*
C. VOLNEY KING.
GILBERT A. ROBERTSON.

NEW YORK, June 9, 1885.

The report of the Committee of Arrangements was then read, as follows:

REPORT OF COMMITTEE OF ARRANGEMENTS.

This Committee reports the fixing of October 27 as the date of the Fall Exhibition of the work of members. The diploma of the Society will be awarded to the selected picture in each of the following clauses:

Landscape—Without figures (or animals).
Landscape—With figures (or animals).
Marine—Surf.
Marine—Sail (including steamers or other vessels).
Architectural.
Interiors.
Portrait—Not taken under skylight.
Group—Not taken under skylight.
Cloud Effect.
Flowers.
Animals.
Still life.
Street views.

Composition subjects:
Expectation.
Halt!
Rustic Bridge.
Enlargement.
Stereoscopic.
Transparencies (other than lantern slides).
Lantern Slides.
Photo-Micrographs.
Platinotype.
Entire Collection.

[Signed] HENRY V. PARSELL.
GILBERT A. ROBERTSON.
W. I. SCANDLIN.

On motion, this report was accepted and placed on file.

The PRESIDENT remarked that the Philadelphia, and probabaly also the Boston Society, had projected exhibitions for the fall of 1885, on which account it has been deemed inadvisable for this Society to hold a general one; but that it was the duty of members to make this exhibition a success, by contributing prints and bearing it in mind during their summer's work.

It is designed to make the exhibition as full as possible, and let every member's work be seen.

Mr. BEACH also said: I have here a specimen of paper negative made on paper coated with gelatino-bromide, and developed with pyro and made transparent by means of castor oil. You will notice that it is quite clear. I have no positive print made from it here to show you, but I am told that they are very clear and show no grain of the paper. This paper is made by the Eastman Dry Plate & Film Company, and they hope shortly to place it on the market.

Mr. J. TRAILL TAYLOR said: At this stage I would kindly ask the President to extend to me the honor of introducing to the Society a gentleman well known to you all, at least by reputation, and whom you will all be pleased to receive—Mr. Gentile, of Chicago, editor of the *Photographic Eye.*

Mr. GENTILE was introduced and said: I thank you very much indeed for the honor paid me, and am happy to make your acquaintance. I don't know that I can say very much that will interest you, but I certainly must congratulate you in having the best photographic society in the United States. The amateurs are doing good work, making rapid improvements, and I think American amateurs will not be behind in giving information. As a professional photographer I have not the slightest feeling of jealousy, and I think I speak for my fellow professionals. I am pleased to notice that so many gentlemen and ladies are taking up the art as an amusement, and shall no longer feel a hesitation in acknowledging myself as a follower of the "black art." * * I again thank you for the kindness shown me.

Mr. BEACH—I will state just here that Mr. Gentile has been very kind in publishing our proceedings very fully, and we are indebted to him for inaugurating such a complete system of reports for our Society.

My attention has been lately called to the prevailing custom of manufacturers of dry plates of putting plates of irregular sizes in their packages. One of our members recently told me that he purchased six packages designed especially to fit small holders, made thin, so they would be sure to go into the grooves of the holder; but he found on an average each of those packages contained from one to six plates which were irregularly cut; they were made wedge-shaped and were too large at one end to fit the holder. And not only that, but they invariably put in packages of small plates three or four plates—what I should call double thick plates—twice the thickness of the groove in which they were intended to be inserted. And from the numerous complaints coming in, it seems to me that we ought, every member of us, to make a memorandum during the summer, in fact be a committee of one to keep an account of the number of packages which we use, and find out the average number of plates in each package which will not go into the holders. Now there is no excuse, to my mind, why a dry plate manufacturer cannot, with reasonable diligence, use a glass of reasonable thickness for small sizes, and also employ skilled enough labor to have them cut accurately. I hope that all the members will keep this in mind during the summer, and make a report to me or to the Committee on Dry Plates whenever they feel disposed.

A communication from Mr. A. B. Benjamin, giving his method of making lantern slides, was then read by the Secretary. (See former page.)

Mr. BEACH—I have received a lengthy communication from Mr. Henry London, of San Francisco, whom I invited to send to us a plan and description of how he made his emulsions, and by way of preface I will pass around these pictures (some of them have been shown before) so that you can see the results which he obtained by this process. I have placed on the blackboard the formula. To begin with, he has a lantern which he claims is rather larger than the ordinary size, 10 inches high by 6 inches square, and he has the two sides of the lantern coated with a covering of two thicknesses of post-office paper, about the color of this envelope, and the front of the lantern is provided with one thickness of this paper.

Mr. BEACH then proceeded to explain the method adopted, by means of diagrams of the apparatus which he had drawn on the blackboard.

[Diagrams of the apparatus will be published in a future number.]

In reply to a question by Mr. Roberts, Mr. BEACH said that Mr. London sensitized his emulsion by boiling twenty minutes, and also used ammonia.

Mr. NEWTON—I judge, from the fact of this process being given, that it is presumed that some of our amateur photographers will be likely to try the experiment of making their own plates. There are one or two things that are well to know in reference to mixing your compounds to form the finest texture of emulsion. A year ago, now, when the weather had become rather warm, one of our manufacturers of dry plates came to me and said he had met with great difficulty since the warm weather commenced, on account of his emulsion curdling when he mixed the solid gelatine and silver together. The curdling of the solution frequently occurs when the salts of silver are mixed with a solution containing a bromide and an iodide. It is somewhat difficult, and requires some knowledge and experience to mix a bromo-iodide, either in forming a collodion emulsion or a gelatine emulsion, but not nearly so much in the case of gelatine emulsion. One of the causes is, the unequal proportion in a given quantity of emulsion of either one or the other, the silver solution or the salted solution. Supposing you have a quart solution of gelatine with your silver in it, and another quart with your salt solution. You commence to pour one into the other. At the commencement you have unequal proportions of the salt and the silver in that vessel at the same time. To avoid the curd, you should have them mixed as they go together. Take two funnels and introduce them through a cork in the neck of a wide-mouthed bottle, and pour your two solutions together, so that when they come together there is no excess of proportions of either at any time, and you will avoid the curd. I offer these suggestions that you may know how to put the two emulsions together so as to get the finest textured emulsion.

I would like to ask a question in reference to those paper negatives, so called, that were handed around among the members. I would like to ask if this is made on this paper, or has it been transferred?

Mr. BEACH—It is made direct on the paper.

Mr. NEWTON—You said it had been oiled with castor oil. Now I have tried oiling of paper with castor oil, and it is not a good thing. Any one who will look at the back of this paper will see what is going to happen; it will dry out and leave this negative unfit for use in a month. If they had left the oil off and used paraffine, or something of that character, or not used anything at all, it would have been better.

Mr. BEACH—I didn't prepare the article myself, but I was told that it was made transparent by castor oil.

Mr. NEWTON—I presume that is so. I would like to show to the Society some negatives without anything added to clear the paper, and also some with paraffine. I experimented with all the vegetable oils and all the different kinds of wax, vegetable waxes, stearine, and everything you can think of, and I advise any one who desires to make paper negatives not to use oil of any kind. Of course, of all the vegetable oils that we know anything about, castor oil is the whitest, and it is also the slowest drying; and that is the reason why it is the whitest, because it does not oxidize rapidly. But it will oxidize finally. It is just a matter of time; that is all.

Mr. BEACH—They have a patent process of transferring the film to glass, and then when it dries, taking it off, so that it will be just the film by itself. Specimens of negatives of that kind were shown here last November.

Mr. ATKINSON—I wish to say that I can indorse Mr. Newton's remarks. I have made paper negatives and have tried castor oil, and find it a decided failure. I have now some paper negatives, 11 x 14, that I made transparent by paraffine. They have been made fourteen years and they are as good today as the day they were made.

Mr. NEWTON—I have a number which I will be glad to show this Society, that have been made twenty years and haven't changed at all.

Mr. BEACH—The next business will be the exhibition of apparatus.

The SECRETARY then showed some apparatus which had been sent in for exhibition. The Scovill Manufacturing Co. sent their recent detective camera. This is covered with leather so as to be inconspicuous, resembling a sample case. None of the machinery is visible until the whole is turned over, when are seen the release, the regulator for varying the speed of the shutter, and also the index and register for focusing at certain distances without looking at focusing screen. There is also a plate to receive a binding screw, by which the camera can be used on a tripod for making time exposures. To aid in this purpose, a ground glass focusing screen is supplied, which slips one side when the slide is inserted, but is not detached. There is an aperture in the rear end of the box, through which the focusing screen can be seen and the picture arranged, when used in this way, for time exposures. For other exposures, there is a supplementary lens and small screen, as usual. Six holders may be packed in the box.

A tripod, also from the Scovill Manufacturing Co., combined the extension and the fixed principles. The legs are in three parts; the lower length is free, and can be put on or taken off by a "fish pole" joint. The upper one slides into the lower, so that a tripod, either lower or higher than usual, and adjustable to uneven ground, can be secured. The whole packs into a canvas bag, with handle for carrying.

A tripod, called the "Fairy," sent by Messrs. E. & H. T. Anthony & Co., packs up into even smaller compass. It is in four lengths, so hinged together that, when folded, it can be packed in a trunk or good-sized valise. That this is a step toward a desirable end was evinced by the interest manifested after the meeting.

Anthony & Co. also sent an example of the "Schmidt" Detective Camera, with latest improvements, consisting of a regulator to change the speed, and an arrangement for setting the shutter from the outside by pulling a knob; also having the auxiliary lens and screen lower down in the camera than usual.

Mr. E. M. ROGERS, of Brooklyn, showed an arrangement for obtaining dissolving effect with a single lantern; a traveling, double-slide carrier is pushed from side to side by the hand. Attached by a pivot, under this moving frame to the permanent frame, is a grooved wooden wheel, about 2½ inches in diameter. Fastened to the wheel is a frame of wire, covered with tissue paper or gelatine. A cord runs from the lower side, at each end of the traveling frame, under the wheel, on the bow-string principle. By pushing the traveling frame to the other side, the cord automatically rotates the wood wheel, which at the same time brings the attached screen up in front of the slide, and cuts off the picture during the change.

Mr. BEACH showed a tripod with sliding, telescopic legs, and a wood top, on which was secured by bolts a neat malleable iron socket, in which fitted a universal joint, having a flat metal slide project from its upper portion. A clamp cap, fitted over a portion of the spherical joint, was held in place by a clamping bolt. A grooved plate was attached to the under side of the bed frame of the camera slid over the metal slide-plate on the spherical joint, holding the camera firmly thereon. A flat spring, also attached to the bed, prevented the camera from sliding off. After the camera was attached, which was quickly done, and the bolt holding the clamping cap released, the camera could be tilted in any direction or angle on the tripod, and was held in position by screwing up the clamp bolt. The invention was sent by D. T. Kendrick, of Providence, R. I., and attracted considerable attention.

Dr. R. E. VAN GIESON, of Brooklyn, N. Y., showed a plate-lifter, made of metal, which held a plate clamped between its spring jaws, and which facilitated the transferring of a plate from one dish to another without dipping the fingers in the solutions. He also exhibited a drop-shutter, having a flat spring attached to the upper part of the slide, so arranged as to break the force of the shock on the lens caused by the fall of the drop, which he thought might in time prove hurtful to a valuable lens.

Mr. NEWTON mentioned a rate to Buffalo of $6, which he had got from the Erie road, to the Convention, in July; and Mr. GENTILE said he had learned that tickets for the round trip could now be purchased for $5 at Messrs. Anthony & Co.'s.

Mr. BEACH—The next thing in order is the consideration of the constitution which has been submitted by the Executive Committee.

Mr. NEWTON—I move that the consideration of the constitution be postponed until the special meeting, which will probably be on the evening of the 19th of June.

Dr. JANEWAY—By Mr. Newton's permission, I will amend his motion by adding that when this meeting adjourns it adjourn until the 19th of June, at eight o'clock.

Mr. NEWTON—I accept the amendment.

Mr. SCANDLIN—The remarks of the last gentleman who spoke suggest to me that there should be, and I presume there is, something in the constitution which we are now living under, which provides for the consideration of the new constitution or change of the old constitution, and I ask if it is not already provided for in some way.

Mr. BEACH—It is. The constitution to be acted upon or amended must be presented at any meeting prior to the meeting at which it is finally passed upon, and as this is a regular meeting, I should have stated at the outset that by a mistake the notice calling this meeting stated that it was a special meeting. This is a regular meeting of the Society, and therefore the revised constitution has been presented at this meeting; but as so much time has been consumed and the hour is late, we will not have time to-night to discuss the matter, and it is thought best to defer it until another meeting, which will be at an early date.

Dr. ELLIOTT—As this is a matter which is to be submitted for the consideration of the members, and one with which we are all somewhat unfamiliar, I move that the proposed constitution be printed, and that each member be supplied with a copy, so that when it shall be presented at the next meeting for consideration we shall be able to act properly and intelligently upon it.

Mr. BEACH—That was thought to be advisable at the last meeting, because our present constitution provides that a notification of proposed amendments should be sent to each member, and the object of discussing the constitution at this time was to see what details were thought desirable, informally, and then to have the final submission of it at the next regular meeting.

Mr. NEWTON—I want to state our position in reference to our new constitution and by-laws. It is not an amendment to the old constitution or the old by-laws. There was a motion made and adopted some time in March or April that we be incorporated, and that a committee be appointed to consider the subject. That committee took the subject under consideration and reported in favor of incorporation. The report of that committee was received and adopted. That committed this Society to a change in its organic structure, and when it became incorporated the old constitution and by-laws were of no avail and dead. And in the incorporation there has to be a constitution and by-laws, but we act for the first year under trustees, who are the incorporators. You, gentlemen, elected them. The by-laws provide that the incorporators shall be trustees for the first year. They are already elected. Now they have framed a constitution under this act of incorporation which you are to decide and dispose of on the 19th. That is just the position that we occupy in reference to the constitution and by-laws.

Dr. ELLIOTT—I would like to renew my motion that the proposed constitution and by-laws be printed and distributed among the members before the next meeting.

The motion, being duly seconded, was unanimously adopted.

Mr. ROGERS then announced to the Society that an electric light was in process of manufacture for use for lanterns, and would soon be ready for exhibition, and asked if any one knew the power of the oxy-hydrogen light.

Mr. ROCKWOOD replied that it averaged 350 candle power.

The meeting then adjourned until Friday, June 19, 1885, at 8 o'clock.

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THE BULLETIN is a vastly improved publication since January 1, 1885.

THOMAS PRAY, JR.

[*From Photographishe Correspondenz.*]

THE TRANSPARENCY OF GLASS FOR ULTRA-VIOLET RAYS.

BY V. SCHUMANN.

(*Continued.*)

A SOURCE of light rich in ultra-violet rays we possess in the electric spark which passes between metallic electrodes. But it is not immaterial what the electrodes are made of, the ultra-violet spectra of the metals being essentially different from each other.

For the foregoing purpose, a continuous spectrum, rich in lines of great chemical action, and sufficient extension toward the more refractive end, had to be chosen. The spectrum of the iron spark suited these conditions best. None is so rich in lines as this, and although the chemical action is sometimes surpassed by others—for instance, the magnesium and cadmium sparks—in a proportionally short time a clear and admirably suitable spectrum picture is obtained from the iron spark upon the photographic plate. As the test with the magnesium spark did not satisfy me sufficiently, I used mostly the iron electrode.

My electric battery consisted of eight Grove cups (sheet platinum 16 x 8 *c. m.*) filled with nitric acid of 40° B. and diluted sulphuric acid (1:10). The zinc cylinders were continuously amalgamated by mercury poured into the cups. This way the continuance of the current was largely increased. Copper wires, 3 *m. m.* thick, connected the battery with the Rhumkoff coil 6 *m.* distant. The latter possessed an induction spiral, the length of which was 19.500 *m.* The coil was constructed for a spark length of 25 *c. m.*, and gave at the beginning of this test, and by applying the Foucault interrupter, sparks 23 *c. m.* long. The platinum interrupter worked quicker, but its sparks reached at most 17 *c. m.*

The strength of light of such a spark is proportionally small; but it increases materially as soon as a Leyden jar is put in. I selected a battery of seven jars, the largest of which was 40 *c. m.* high, the two smallest ones measuring 17 *c. m.* The spark length was reduced hereby to about 3 to 4 *m. m.*

The iron electrodes were fastened in an adjustable tripod, with which I could let the spark pass over the slit parallel as well as at right angles.

The crown glass wedge was laid with its plane side close to the slit, and it could be moved upon a strip of glass at right angles to the slit. The edge of the wedge was provided with a millimeter division to find out the thickness of the same at some later time at those places, which, during the photographic exposure, had covered the slit.

My quartz spectrograph has several collimators and two photographic cameras. For this experiment I used the collimator of 760 *m. m.* length and the same size camera. Both lenses consist of faultless quartz, are ground plano-convex; but one rotates to the right, the other to the left; the diameters are 40 and 42 *m. m.* The prism, likewise quartz, is made out of two halves, according to Cornu, which were fastened together with glycerine. The refractive angle is 60°, the faces 32 by 36 *m. m.* The material is likewise left and right-handed, to eliminate the disadvantages of circular polarization. This prism was made with the greatest of care by the optician. Its mounting in the spectrograph was made with the aid of the collimator in the ordinary manner. The slit to this I had replaced by a *Gauss* ocular.

The photographic picture falls on the focal plane of the camera objective. The focal plane of a quartz lens, by application of just such a prism, being strongly inclined against the optic axis of the lens, the sensitive plate must be placed in the same inclined position. The plate in this case formed with the lens axis an angle of 26°.

For the negative I used gelatine plates, which contained partly bromide of silver and partly bromo-iodide of silver. The emulsion I had cooked for a full hour, with all the gelatine, and the plates had been dried in cold air in the drying closet.

The time of exposure was eleven, and only in one case thirty minutes; the distance of the spark from the slit 29 *m. m.*, the width of the slit 0.200 *m. m.*, only once 0.500 *m. m.*

Upon each plate I photographed with a finer slit 0.020 *m. m.* a cadmium spark spectrum to compare its lines with those of the iron spectrum. The undulating length of the known cadmium line No. 17 λ 2743 agrees, at least to the fourth place, with the length of an iron line, which forms in the ultra-violet spectrum of this metal, with several others, quite a characteristic group, and appears always first in the developer. With the aid of this line, and with the aid of the measurements of *Liveing* and *Dewar*, I have then determined the undulating lengths of the most refractive lines, which had shown a chemical action in my absorption spectrum. The measurement of the wedge thickness I took under the microscope. The result of my repeated views was the following: The Crown glass in a thickness of 0.125, 0.201, 0.737 and 1.407 *m. m.*, allowed rays to pass through to the undulating length λ 2,660, 2,710, 2,935 and 3,230. The longest spectrum, which reaches to 2,660, and when the glass had only a thickness of 0.125 *m. m.*, required 30 minutes exposure, with a slit opening of 0.5 *m. m.*; the others I had taken in only 11 minutes, with a slit opening of only 0.2 *m. m.*

According to this, it may appear as if the last three results have been considerably more favorable by reducing the time of exposure of 30 minutes. But this is not the case, because other views showed distinctly that the length of the spectrum for a certain glass thickness does not increase materially when it reaches a certain time of exposure. This I found confirmed when I replaced the iron sparks by the far stronger sparks Cd. and Mg.

It can be seen from these results that Crown glass, about ¾ *m. m.* thick, admits the rays as far as the ultra-violet solar spectrum reaches. Whether the solar light is in the same state as the light from the jar spark, I could not find out yet on account of winter. I have to leave it also at present undecided whether other transparent kinds of glass give equally favorable results as the one of my Crown glass wedge. At all events, the experiment proves that glass in sheets is much more transparent for ultra violet light than was generally accepted until now.

This circumstance is highly important for the study of the glass spectra. Spectral apparatus whose optical parts consist of glass remain excluded. Only one material exists which can be used to advantage, and that is quartz. That with a quartz spectrograph, the spectrum of a Plucker's glass tube, in the form given to it by Franz Miller can photograph the spectra further into the ultra violet than with the otherwise usual instruments, is proven by my spectrographic views of hydrogen. They reach an end at λ 2,850. The photographic maximum of these spectra lies, in as much as the line H λ is not taken into consideration, not in the visible spectrum, but far off, in the ultra violet. To this is added further, that the photographic action, notwithstanding the glass layer which the ultra violet rays have to traverse, is extremely quickly perceptible. Already after a few seconds of exposure a coloration of the plate in the developer takes place.

Translated by H. D.

[*Journal of the Photographic Society of Great Britain.*]

ON THE ACTION OF LIGHT UPON CHLORIDE OF SILVER.

BY FREDERICK GUTHRIE B.A., PH.D.

THE blackening produced by light upon chloride of silver in the moist state was ascribed by Scheele to the liberation of chlorine and the deposition of metallic silver. He proved that the blackened mass was only partially soluble in ammonia, and that the portion which remained undissolved by this reagent was soluble in nitric acid. Daniell and others considered the blackening to be due to the formation of oxide of silver, imagining the decomposition of the water present by the chloride to be accompanied by a corresponding oxidation of the reduced silver. Others, again, have supposed the formation of a subchloride.

The few experiments which I subjoin tend, unmistakably, to support the view originally advanced by Scheele.

1. Two or three grammes of dry chloride of silver were sealed in a glass tube, and exposed to direct and diffused sunlight. There was increased tension in the tube. Chlorine was shown, by the iodine test, to be present in the free state.

2. A portion of chloride of silver, dried at 100°, was introduced into a perfectly dry tube. The tube, being then half filled with pure and dry benzole, and heated until the boiling of the benzole had expelled all the air, was hermetically sealed, and exposed with agitation to the light. The rapid blackening which the chloride here underwent proved the presence of oxygen to be unnecessary.

3. Four or five grammes of moist chloride of silver were sealed in a tube. The tube was half filled with water, and hermetically sealed. After exposure to the light for ten or twelve days, with frequent agitation, it was opened, the contents thrown upon a filter, and washed with cold water. On adding nitrate of silver to the filtrate, a precipitate of chloride of silver was formed. The gray mass on the filter was treated with strong ammonia until the latter ceased to dissolve any more of the unaltered chloride. There remained on the filter a slaty-gray body, which, in a dry state, took the metallic lustre under the pestle. This body was soluble in nitric acid, not reprecipitable by ammonia, but precipitated by dilute hydrochloric acid. The non-precipitation of the nitric acid solution by the most gradual

addition of ammonia, seemed already to point to the absence of chloride.

4. About ten grammes of the moist chloride were introduced into a tube of 1½ feet in length, and ¾ inch internal diameter. After adding water and sealing, the tube was exposed as before. The supernatant liquid was poured off, and the mass washed by decantation. The hydrochloric acid was thrown down by nitrate of silver. The chloride of silver was estimated on a weighed filter

(dried at 100°C.) AgCl = 0·2125 gramme.

The washed material from the tube was digested with strong ammonia. The slaty-gray residue which subsided, leaving the liquid above quite clear, was collected upon a weighed filter and washed, first with ammonia, then with water,

(dried at 100°C.) Gray substance = 0·1756 gramme.

This substance assumed the metallic lustre under the burnisher. It dissolved in warm nitric acid, decomposing the latter. The substance, together with the filter, was thrown into strong nitric acid; after digestion and due dilution, it was filtered. The silver was thrown down by dilute hydrochloric acid, collected on a weighed filter and estimated

(dried at 100°C.) AgCl = 0.2254 gramme.

Supposing, now, the gray substance obtained to have been metallic silver, it should have given 0·2333 gramme of chloride. The amount actually obtained, though too small, is yet sufficiently near to the calculated quantity to show that the original chlorine of silver subjected to the light had really undergone decomposition into chloride and metallic silver. That the chloride of silver obtained from the hydrochloric acid, found in the tube on breaking it open, was somewhat smaller than that from the silver, was probably due to an escape of a portion of the free acid by evaporation during manipulation.

5. About twelve grammes of the chloride of silver were introduced into a tube; the tube was then half filled with fuming nitric acid, sealed, and exposed as before. On opening the tube it was found to contain hydrochloric acid. The chloride was found to have undergone a blackening quite as deep as that which had taken place in chloride of silver surrounded by water, which was exposed to the same light for the same time. On treating the contents as in experiment 4, there was found

Gray substance............ = 0·1643,
which gave.........AgCl = 0·2040.

The quantity, supposing the substance to have been silver, should have been

AgCl = 0·2183.

This is sufficiently near to show that the substance in question was nothing else than metallic silver.

6. Confirmatory of experiment 5.

7. The circumstances were as in experiment 5, excepting that the nitric acid employed was more dilute.

On treating the contents as in experiment 4, I found

Gray substance = 0·2207 gramme,

and this gave

AgCl = 0·2870 gramme,

instead of the calculated quantity,

AgCl = 0·2932 gramme.

In experiments 4, 5, 6, the gray substance when dry assumed the metallic luster under the burnisher.

The fact that the choride of silver was reduced to the metallic state, even in the presence of nitric acid, was quite unexpected. I found that neither by removing the affected mass from the light, and agitating it, nor even by warming it, was the original whiteness restored. Indeed, the silver was only very gradually attacked by boiling nitric acid, unless the undecomposed chloride had been previously removed by the action of ammonia. It seems as if the light, in reducing the silver *in spite* of the nitric acid, had hereby thrown it into a more passive state, and that only after contact with the alkaline ammonia was its original basic condition restored.

The chloride of silver used in these experiments was in every instance washed by decantation, in order to avoid the presence of organic matter.

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THE PHOTOGRAPHIC IMAGE.

BY CAPT. W. DE W. ABNEY, F. R. S.

[A communication to the Photographic Society of Great Britain.]

When white light is allowed to act on chloride of silver for a sufficient time to blacken it, I think every one will agree that, at all events in the presence of moisture or moist air (as is all air unless chemically purified), chlorine is given off. I think, also, it will be allowed that when bromide of silver is acted upon similarly, bromine is given off; a gelatine plate when darkened absolutely smells of bromine, or some compound analogous to it. Further experiment has shown that the rays which are chemically active are confined to that region of the spectrum which the silver salt absorbs. Let us take chloride of silver as the example on which to found an argument, for any reasoning which may apply to the one will equally apply to the other haloid salts of silver. I suppose I shall not be going beyond general belief, or at all events beyond the belief held by those to whom I care to address myself, that homogeneous matter is made up of molecules, all having a similar composition, and that such molecules are themselves made up of atoms. In the case of bromide of silver, for instance, the atoms are bromine and silver. Now we are told in most text books that silver is a monad, and that it requires only one atom of silver to combine with one atom of bromine, or rather perhaps that it requires only one atom of bromine to combine with one atom of silver; confining myself, however, to pure chemistry, without any reference to photographic action, the evidence of this is based on the behavior of silver when combined with certain other elements. The opinion, however, that silver is a monad is not allowed by some chemists of the highest repute. However, we will, for the purpose of argument, take it that the old idea is correct, and that Ag requires one atom of the halogens to combine with it. The first question we have to ask is, does such a body as a sub-chloride or sub-bromide exist? Now we will not go into photographic evidence, but confine ourselves to chemical evidence simply. In 1839, the year when Daguerreotype was discovered, Wohler found that when hydrogen was passed over argentic-oxalate, mellitate or citrate, when heated to the boiling point of water, half the acid was set free, and a dark brown argentous salt remained. The acid can be removed by washing, only a small portion of the argentous salt being removed, the solution of the latter forming a port-wine colored liquid.

Further, Wohler obtained argentous oxide (Ag_4O) by means of repeatedly boiling soda-ley with argentic arsenite. Argentous oxide is, of course, the base of argentous citrate, oxalate or mellitate. Again, Geuther found that argentous oxide is formed by precipitating silver nitrate with cuprous hydrate. Again argentous oxide is produced by the action of hydrogen peroxide on metallic silver. A bright silver plate immersed in a neutral solution of hydrogen dioxide becomes covered with bubbles of oxygen, and coated with a grayish white film, while part of the silver is converted into hydrated argentous oxide, according to the equation, $2\ Ag_2+H_2O_2=2\ HAg_2O$. Argentous salts are also produced by passing hydrogen into ammoniacal solutions of silver salts.

Such is an outline of the chemical evidence of the existence of argentous oxide, and it would appear that such evidence is very strong, in fact as strong as required under any circumstances. That this is not the work of only one chemist adds more weight to the existence of such a compound.

Such being granted, the admission of the possibility of the existence of sub-chloride or sub-bromide of silver is at once apparent. Wohler describes a method by adding to the argentous oxide a solution of hydrochloric acid, or by common salt. In this case we have:

$$Ag_4O+2\ HCl=2\ Ag_2Cl+H_2O,$$
$$\text{and } Ag_4O+2\ NaCl=2\ Ag_2Cl+Na_2O.$$

Argentous chloride is also formed by bringing silver in contact with a solution of sal-ammoniac, and the first action of ferric chloride or cupric chloride is the same. Argentous bromide or sub-bromide can be formed in the same way. By chemical analogy, if there is such a substance as the sub-oxide or argentous oxide, there is the same reason for believing in the existence of the sub-chloride and sub-bromide. Now comes the question as to whether the same compound is produced by the action of light.

When silver chloride is exposed to the action of light, we know well that a violet-colored substance is produced, and that such a coloration is also found when exposure takes place in the presence of nitric acid. We also know that metallic silver dissolves in dilute nitric acid. Now since chlorine is evolved one or two things must occur, either the total liberation of the chlorine from the silver salt, or else its partial liberation. Which does it do? Under any ordinary circumstances it would be said that it was not metallic silver which was left, since it was unacted upon by nitric acid. Some years ago Guthrie experimented on this subject, and he put it down that metallic silver was formed, but that it was in a passive state, similar to that state which iron can take. The connection between the two is not very apparent, considering the manner in which iron loses that state. I would further mention that Thorpe found that while nitric acid dissolved about 2 parts per 100,000 of white silver chloride, that when darkened by light only .8 per 100,000 was dissolved. Now we have another exceedingly interesting proof that the salt formed by light and the argentous chloride are the same. If a collodion film containing silver chloride be exposed to light till it is lavender, and be exposed to the action of the spectrum, we get a colored representation of that spectrum. Further, if a similar film be exposed to light and the silver be reduced to the metallic state by a developer, and it is then immersed till it assumes a gray color in ferric chloride or cupric chloride, the same colorific action takes place; or again, if a metallic silver plate be treated in the same way, we have a colored spectrum. It is curious that such should be the case if the compounds are different.

Guthrie's experiments show that a weighable quantity of the chlorides is converted into the colored salt, but in any case the amount of chlorine liberated is small compared to what it should be theoretically. This acts against the metallic theory equally as against the sub-chloride theory. To my own mind there is no difficulty, however. It must be recollected that chlorine as it is liberated from the chloride by light has always sub-chloride beside it, and it is always more probable that it will combine with the sub-chloride and form chloride, $Ag_2Cl + Cl + Ag_2Cl_2$, rather than escape. For this reason the difficulty of finding a large amount of liberated chlorine is not present in my mind; in fact I could not conceive well otherwise. The same argument applies to the formation of the sub-bromide from the bromide. Guthrie finds that the substance he gets in every case is insoluble in nitric acid, but that after treatment with ammonia the residue is soluble. This is exactly the behavior of chemically-produced argentous chloride, and is a striking proof that the light-produced compound and this are identical.

It may be of interest to show the members of the Society sub-chloride in bulk. My friend, Dr. Hodgkinson, Professor of Chemistry at the Royal Military Academy at Woolwich, has kindly isolated for me the sub-chloride formed by the action of light on the chloride. This he has done by exposing chloride to light under a proper chlorine absorbent, and then treating the mass of chloride and sub-chloride with a solution of sodium chloride, which dissolves the chloride, leaving the sub-chloride behind.* Further, I show a sample of the sub-chloride prepared by direct chemical means. The argentic citrate was reduced in a current of hydrogen at the temperature of 100° C., and then acted upon by a solution of soluble chloride, with the result that we have a sub-chloride. Both the light-produced and chemically-produced Ag_2Cl are unacted upon nitric acid, but by treatment with ammonia split up into AgCl and metallic silver.

It is usually said, if silver bromide be exposed to light in nitric acid, that no change takes place in it—*i. e.*, that it remains as silver bromide. Now to test this I exposed silver bromide to light in nitric acid—in strong nitric acid—and subsequently treated the acid with silver nitrate. A faint precipitate immediately showed. To make this evidence of value, I asked Dr. Hodgkinson to make an experiment of the same nature, with the result that he obtained the same precipitate. If dilute nitric acid be used the silver is dissolved from the sub-bromide.

For the visible image, then, I can conceive of no difficulty in the reduction of the sub-salt. I have here no intention of entering into the theory of development, which has recently been put down to an electrical or voltaic action. I would only remark that development must always be dependent on such action, and that the mere fact of reduction of a compound to an elementary body entails such an action, as is very well known. Chemical action and voltaic action are interdependent one on the other; neither one can take place without the other, as I endeavored to show in my Royal Institution lectures of last year.

(*To be continued.*)

[*From the Photographic News.*]

SOME RECENT EXPERIMENTS IN EMULSION PHOTOGRAPHY.

BY A. L. HENDERSON.*

In my lecturette to-night I do not expect that there will be much to startle experts in the way of novelties; but I flatter myself that, at all events, an animated discussion will follow, which may throw light on some points, which, to me, are inexpliciable.

I think I may as well commence by showing what influence gelatine has on emulsion. Of course, you must be aware that to get the best results it is necessary to have a chemically-pure gelatine; this is not easily obtained, and it necessitates some little purification. My experiments in this direction number some hundreds, and it would be tedious for me to detail anything like that number; but I will just mention a few. The most common method is to mix albumen with a solution of gelatine, and warm up, so as to coagulate the albumen. This coagulation takes a great deal of coloring matter with it; but it also robs it of some of its setting properties. Animal charcoal acts very much in the same way. Neither of these methods sufficiently purifies gelatine according to my appreciation. Gelatine contains a large quantity of some gas, probably carbonic acid. I think the experiments published by myself some time ago prove this, and for the benefit of those who may not have heard of them, I may as well reiterate them. Take a solution of gelatine—say Coignet's—place the same under a receiver, exhaust the air, and watch the result. The moment you begin to pump, the gelatine will effervesce over the vessel; but, if we let in the air, it will subside, and, after repeating this operation several times, the effervescence ceases. This, in my opinion, shows the presence of gas. Now, this gas is injurious to emulsion, not so much from a chemical point of view, but from the peculiar pits they show when plates are prepared. The best cure for emulsion prone to pits of this kind is the addition of a drop or two of liquor ammonia to each ounce of finished emulsion. I am well aware that credit is given to the presence of grease as a cause of pits, and I am not going to deny that some kind of pits are due to grease. You may remember that Mr. A. Brown exhibited some gelatine that contained (placed purposely) grease to a large extent, and yet there were no traces of spots. Carbonate of magnesia, ox-gall, soda nitrate, bicarbonate of potass and neutral salts will often remove insoluble matter. With ordinary gelatine it will be noticed that the smaller the quantity used to emulsify with, the clearer the shadows will be, and this is due to the smaller amount of impurities. "Of all evils, choose the least." The impurities forming compounds of silver are objectionable; but, you will ask, how are we to avoid this? Well, purify the gelatine first, wash it in water to remove all the soluble matter, next soak it in a solution of bromide of potass (5 grains to the ounce); you may leave this all night, if you please; pour this off and rinse, then proceed to make your emulsion with it. It is not necessary to treat the whole of the gelatine this way, only that which is used to emulsify with. I know several professional plate-makers who precipitate with alcohol all the gelatine they use for emulsification, and I have no doubt this method is almost as good as the other mentioned. Gelatine treated by either of these methods, then boiled with liquor ammonia until all the setting properties are destroyed (this is the compound of meta-gelatine I call leucine), may be stored away in stoppered bottles for future use; it will keep indefinitely—*i. e.*, I have some of the first I made, years old, still good, and it seems to work better by keeping. I think I have said enough to show the importance of having pure gelatine.

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* Analysis showed that the proportion of Ag to Cl was passed within 1 per cent. of the fractional amounts required for Ag_2Cl.

*Read before the London and Provincial Photographic Association.

I will now explain one point that governs rapidity—viz., the amount of gelatine used in emulsifying. It may not be generally known that with less than a grain per ounce excellent results are obtained, provided that directly the solutions are mixed, more gelatine is added; the state of the silver bromide is constantly being altered, the more gelatine that is added. I will make an experiment to show this. I have here some silver nitrate and some bromide of potass, each dissolved in a small quantity of water. I will mix them, and you will see a dense precipitate of silver bromide will be thrown down; I will wash this to free it from soluble matter; now I will add a few threads of dry gelatine, and apply heat to melt it. You will perceive that immediately the bromide of silver begins to break up, if I add more gelatine, the emulsion gets finer. I have not yet ascertained the limit of this action. I dare say speed of emulsion is influenced this way. I confess I cannot find a theory that will explain this. Professor Stebbing, some time ago, published a statement that if bromide of silver was boiled in the presence of free bromide and gelatine, a fine division of the silver took place. He believed it was owing to the free bromide; but this is not so—it is due to the gelatine alone.

I will now dwell on the addition of iodides in emulsions. Some time ago, a boiling formula was given to me, which contained a large proportion of iodide. This formula gave good results, but required two hours' boiling to give 20 on the sensitometer, although the party who gave me the recipe stated that he got 26 with forty-five minutes' cooking. This formula was given to Mr. Gregson, of Blackburn, a clever amateur, and I will read a portion of his letter to you. I merely mention this that you may see the uncertainty of the boiling method. He says: "I tried the boiling formula you gave me—result, ruby when mixed; blue stage reached in thirty minutes' boiling, and plates gave a trace of 20 on the sensitometer; fair quality, but short of density, rather. Forty-five minutes' boiling gave 14 on sensitometer, and sixty minutes gave 4 on sensitometer, but no fog. I guess if boiled a little longer, no image at all."

There are many ways—about eight—of adding iodide to emulsion; first, it may be put in with the gelatine, and converted into silver iodide before adding the bromide; secondly, it may be put in with the bromide and converted simultaneously (this is the method usually employed); thirdly, add the bromide first, leaving a small excess of silver, converting the said excess of silver by the addition of any iodide; fourthly, saturate the silver with iodide (filtering out the percipitate, by this method, more or less iodide will be introduced, dependent on the strength of silver solution); fifthly, the iodide may be added to the emulsion directly it is made; sixthly, mixing a pure iodide emulsion to the bromide one before coating; seventhly, by the addition of hydriodic acid, either to the silver solution, or to the bromide (this salt of silver is comparatively white, and has its advantages over other methods); eighthly, by adding to or washing in a solution of iodide of potass the emulsion, after the soluble salts have been taken out; this will effectively remove fog from an emulsion, but it will slow it considerably. Iodide in any form in an emulsion is advantageous, but in a rapid emulsion the color is objectionable—yellow, green, or canary color renders it difficult for actinic light to pass through, and consequently a thin image is the result, besides slowing development and fixing. It appears that iodide in emulsion coats, or partially converts, the fine particles of silver bromide into silver iodide at a low temperature, thereby preventing, to a great extent, the bromide of silver becoming coarse; and it will be noticed that when iodide is added to a bromide emulsion before being washed, and the plates coated with it are placed in hyposulphite fixing solution, they remain a long time before any apparent fixing takes place; then very suddenly the fixing takes place, leading one to think that when the outer skin or coating of iodide is dissolved, the hypo acts more energetically on the silver bromide.

Iodide is a great restrainer, and a greater amount of ammonia or heat may be applied in preparing emulsion without fog. I do not wish it to be understood that it directly increases speed. I dare say there are other compounds that will answer better. I have expressed an opinion that iodide of silver cannot exist in the presence of an excess of free bromide when subjected to great heat; and my ideas are, to a certain extent, borne out by Potilitzin's and Humpidge's experiments, lately recorded in the scientific journals:—"One of the most familiar of reactions, that of the displacement of bromine by chlorine, we have described in some of Potilitzin's results; more lately, Humpidge, ignorant of the former's experiments, has been working in a similar direction, and finds, even at ordinary temperature, that bromine is capable of displacing chlorine in certain proportions, under given conditions. He covered freshly-precipitated chloride of silver with bromine water, and allowed it to stand for some time, at various temperatures; the results were very remarkable. After twenty-four hours, at a temperature of 11° C., 5.28 per cent. of the chlorine had been displaced by bromine; after seventy-six hours, at 11.9°, 10.15 per cent.; after seven hours, at 44.4°, 11.28 per cent.; and after twelve hours, at the same temperature, 14.33 per cent. This experimenter is continuing his researches; but, so far even as he has gone, his results well deserve recording."

Regarding the washing of emulsion, a great deal may be said. I am sorry to learn that many makers still adhere to the dirty, messy way of straining or breaking it through mosquito netting. After a time the fiber gets filled with bromide of silver, and no amount of washing will remove it, and consequently the subsequent emulsion passed through takes some of the bromide with it, and causes black spots. Nothing can be better for breaking up emulsion than a vulcanite or well silvered metal tube covered at one end with No. 16 wire gauze. While I am talking of washing emulsion, I may as well mention that an emulsion which will sometimes give a slightly foggy result will invariably give clear negatives if warmer water is used in the washing, or if the emulsion is precipitated with alcohol; the reason is that meta-gelatine is more soluble in warm solutions.

I would like to say something about the sensitometer—Warnerke's. That clever instrument is in many ways far from perfect yet. I could not do without it. It is most valuable for comparing one's own results, but useless for comparison with others; no two tablets seem of the same density; and emulsion makers seldom use the same formula. Some time ago, a plate-maker asked me to test some plates for him; they were not quick—14—and the No. 1 indication was poor and thin, which is quite the reverse of what might be expected. Strange to say, a plate registering 22 gave much more density; but the camera test reversed this order of things, for the slow plate gave the densest image. I was informed that the plate contained no iodide.

Very fine results may be obtained by mixing emulsions of different speeds, but it has to be done carefully. It must not be thought that an emulsion—say giving 1 and 7 respectively on the sensitometer, and mixed in equal quantities, would give the mean speed, 4. In practice it will be found that to get the mean speed, (*i. e.*, 4), you would require to mix one part of No. 1 to three parts of No. 7. It must also be remembered that emulsions of various speeds vary in color, and also in density; and if a large quantity of a slow emulsion (*i. e.*, one giving a yellow or red color) is mixed with a small quantity of very rapid, the slow will completely destroy or eclipse the rapidity of the quick one. To get the mean density of emulsions, the proportions given for speed seem about the same.

In conclusion, I will give you a formula for a very rapid emulsion—*i. e.*, one that will give 25 on Warnerke's sensitometer with half the usual exposure recommended. I have no idea of the speed compared with collodion, or even with a plate exposed the usual 30 seconds.

Formulæ.

No. 1.—Nelson's gelatine No. 1	20	grains
Water	4	ounces
Carb. ammon	60	grains
Br. potass	180	"
Iod	10	"
No. 2.—Ammonia-converted silver nit.	240	"
Water	4	ounces
Nit. acid	2	minims

Mix the silver to the gelatine in a fine stream, place the jar in three quarts of boiling water, leave all night, then add dry gelatine 480 grains. Warm to melt the gelatine; let this stand another day; break up through 16 mesh gauge, and well wash. A good developer is as follows:

No. 1.—Pyro	4	grains
Br. potass	2	"
Water	1	ounce
Sulphite soda	$\frac{1}{16}$	"
Nit. acid	$\frac{1}{32}$	"

Mix sulphite soda, nit. acid and water, then add pyro. This will keep concentrated indefinitely.

No. 2.—Liq. ammon	4	minims
Water	1	ounce

For use take half of each. In lieu of ammonia take carb. potass 40 grains.

Found in the Editor's Box.

SOME of the Chinamen at Red Bluff were excited over the eclipse. One wanted to know if "moon eat um up sun?"—*San Francisco Examiner.*

COL. CASEY is daily importuned by members of Congress and other officials for mementoes of the Washington Monument. The requests are generally for photographs of the monument and paper weights made from the capstone. As Col. Casey has to pay for such articles out of his own pocket, the supply does not equal the demand.—*Washington Star.*

AN old lady was viewing the exposed stock of some burnt-out dry goods store on Market street a few days ago. The burnt-edged bales were all strewn across the sidewalk. Above was the sign, "Another Sacrifice." "Another sacrifice," said the old lady. "Yes, burnt offerings!"—*San Francisco Chronicle.*

What Our Friends Would Like to Know.

Q.—J. A. S. writes: "With this I send two negatives that are very dirty, and I like to know how to prevent such an occurrence in the future. My method of working is to use Cooper's concentrated developer, then place in a saturated alum solution, then into the hypo. When I use the solutions in this manner my hypo solution gets very milky; and if I leave out the alum my negatives are colored yellowish. Let me know what is the trouble."

A.—From the look of the negatives, and your description of the method of developing, we think you are not sufficiently careful in washing. Do you wash between each change of bath? If not, do so, and more especially between the alum and the hypo. Do not leave out the alum or you will surely get colored negatives.

Q.—C. H. writes: "How do you purify a printing bath so as to make it absolutely pure, after it has become saturated with albumen and other deleterious impurities? Please give specific directions in next issue of the BULLETIN."

A.—The best method for purifying a printing bath is to make it alkaline and place in the sun for some hours and then filter. If one treatment fails to precipitate all the organic matter, repeat the operation, and the bath will be good. Then make slightly acid with C. P. nitric acid.

Q.—C. H. again writes: "I would like to know the proper formula for toning and fixing extra brilliant ready-sensitized albumen paper. I want a black tone, and also a warm tone."

A.—The formula for toning and fixing is given with each package of the paper. Fume the paper fifteen to thirty minutes before printing, in a tight box containing a dish of strong liquid ammonia. After printing, wash the prints in pure water, and for warm tones add a few drops of acetic acid to the water, which will turn the prints red, and allows of toning to any desired warmth.

Bibliography.

Die Heliochromie, das problem des photographirens in den natürlichen Farben. Dusseldorf, Ed. Liesegang's Verlag.

This little volume of 75 pages octavo is a complete resumé of the work done in photography in natural colors. It contains a history of the subject, and chapters upon the work of Brequerel, Niépce, Poitevin, G. Wharton Simpson and Saint Florient. A description of the details of the various methods employed by these experimenters is given in a very complete manner, and with the characteristic care natural to German writers upon these subjects. The work is a very important one, and should be read by all interested in the advancement of photography. We know of no book that contains anything like the same amount of valuable information upon this extremely interesting department of photography, and heartily recommend the volume to our readers.

The Studio, and What to Do in It. By H. P. Robinson. New York, Scovill Manufacturing Company.

This work consists of 143 pages octavo, of articles from the pen of a well-known writer. Many of these articles have appeared in the columns of the Bulletin, and several are new. No words of ours are necessary to commend the results of the labors of a gentleman of Mr. Robinson's abilities. The various chapters treat of the form of the studio, backgrounds, accessories, the various methods of posing and managing the sitter, including groups, retouching, etc. One of the most valuable chapters in the book is "The Education of a Photographer." In this Mr. Robinson remarks, speaking of the artistic part of this education, "So much of art, especially in its higher aspects, belongs to feeling rather than to knowledge. * * * The knowledge of the laws which govern production can be taught, but the faculty of producing them cannot be imparted. * * * Let the student master the principles and acquire the rules at the very threshold of his art career, for here he is on firm ground, as all that relates to the arrangement of lines and tones can be tolerably clearly stated. * * * After mastering those things which can be reduced to definite rules or clearly stated principles, art study chiefly consists in observation and practice, in which the knowledge gained is perpetually applied."

We do not agree with Mr. Robinson on his ideas about the knowledge of the *science* of photography cramping the artistic faculty. Our experience has been that students with artistic tastes are the better scientists, and we say this from a pretty extensive experience with students of all classes. In other words, scientific and artistic training are compatible, and a good scientist generally has some artistic tastes.

Mr. Robinson's book is full of good thoughts and artistic suggestions for the photographer, and we commend it to our readers.

Crayon Portraiture Self-Taught. New York, W. S. Reynolds.

In this small pamphlet of 30 pages 12mo will be found many useful hints for crayon portrait work. The author treats of the instruments and materials, sketching, mounting the paper, transferring, toning, background, and the use of the different implements for finishing a portrait. The author does not pretend to teach drawing, but endeavors to guide those with some knowledge in this direction.

Patents.

ENGLISH.

Applications.

2,793. William Richards, 8 Quality Court, London, W. C., for "Improvements in the conduction of artificial light."—3d March, 1885.

3,074. James Logan Watkins, 7 Furnival's Inn, Middlessex, for "An improved tripod stand."—9th March, 1885.

3,134. Henry Harris Lake, 45 Southampton Buildings, London, for "An improved heliotypic or photo-lithographic process and apparatus to be used therein." —(*C. Angerer* and —— *Goschl*, Austria.)—[*Complete Specification.*]—10th March, 1885.

3,150. James Cheney, 17 Oakley street, Waterloo Road, London, for "Improvements in tripod stands and tops for the same for photographic cameras."—10th March, 1885.

3,185. Alfred Julius Boult, 323 High Holborn, Middlesex, for "Improvements in apparatus for applying photographic emulsion to plates."—(*Eli John Palmer*, Canada.) — *Complete Specification.* — 11th March, 1885.

3,204. Joshua Billcliff, 27 Richmond street, Chorlton-on-Medlock, Manchester, Lancashire, for "Improvements in photographic cameras."—11th March, 1885.

3,581. Alfred Peter Sharp, 17 Great Brunswick street, Dublin, for "Photographic dark slide for negatives on paper." —20th March, 1885.

3,598. Matthew Whiting, 1 Lavender Hill, Wandworth, London, for "Facilitating the exhibition of slides in the magic lantern." —20th March, 1885.

3,644. Joshua Bilcliff and Josiah Thomas Chapman, 27 Richmond street, Chorlton-on-Medlock, Manchester, for "Improvements in photographic cameras."—1st March, 1885.

3,662. John Rigby, 46 Lincoln's Inn Fields, London, W. C., for "Improvements in the construction of photographic cameras."—21st March, 1885.

3,755. Harold Dennis Taylor, 6 Grosvenor Terrace, Bootham, Yorkshire, for "The improvement of photometers for estimating photographic exposures by the employment of standard parliamentary candles, etc."—24th March, 1885.

3,766. Alfred Horace Dawes, 8 Quality Court, London, for "Improved apparatus for transporting and exposing sensitized films or plates."—24th March, 1885.

3,778. Alexander Melville Clarke, 53 Chancery Lane, London, W. C., for "Improvements in photographic paper and in sensitive emulsions therefor."—*E. & H. T. Anthony & Co.*, United States.—(Complete Specification.)—24th March, 1885.

3,999. Alexander Cowan, 36 Porchester Terrace, Bayswater, London, for "An improved automatic camera and changing-box combined."—30th March, 1885.

4,102. George Lowdon, Reform street, Dundee, Forfarshire, for "Improvements in photographic cameras and shutter arrangements for same."—1st April, 1885.

4,160. Llewellyn Saunderson, 10 De Vesci Terrace, Kingstown, Dublin, for "The measurement and the photographing of spectra, and called 'The new spectremeter spectroscope.'"—2d April, 1885.

4,191. John Henry Johnson, 47 Lincoln's Inn Fields, Middlesex, for "Improvements in obtaining copies of drawings, designs, writings, and the like, by the action of light." (*Clarisse Zoe Joltrain*, France.)—2d April, 1885.

4,234. William Middlemiss, Holmefield Mill, Thornton Road, Bradford, Yorkshire, for "Improvements in photographic cameras." 7th April, 1885.

4,288. Scotto Clark Nash, 33 Chancery Lane, London, for "Improvements in portable photographic cameras."—7th April, 1885.

4,378. Edward Marlow and Henry Bishop, 4 and 5 Arcade Chambers, Corporation street, Birmingham, for "Improvements in the construction of dark-room lamps or lanterns for photographers' use." — 9th April, 1885.

4,528. William Ford Stanley, 4 and 5 Great Turnstile, Holborn, Middlesex, for "Improvements in photographic cameras."—(*Complete specification.*)—13th April, 1885.

4,529. William Ford Stanley, 4 and 5 Great Turnstile, Holborn, Mlddlesex, for "Actinometer for photography."—13th April, 1885.

4,531. William Low Sarjeant, 19 Enmore Park, South Norwood, Surry, for "Spring shutter for camera."—13th April, 1885.

4,786. Edward Marlow, 4 and 5 Arcade Chambers, Corporation street, Birmingham, for "Improvements in photographic dark slides."—Dated 18th April, 1885.

5,014. John Kershaw, 10 Quadrant, Buxton, Derbyshire, for "Improvements in the shutters of photographic cameras."—23d April, 1885.

5,052. John Clayton Newburn, 169 Fleet street, London, for "Improvements in the production of pictures with the aid of photography." —(*Louis Jacques Henri Cellerier*, France.)—23d April, 1885.

5,103. George Frederick Redfern, 4 South street, Finsbury, Middlesex, for "Improvements in the reproduction of engravings, drawings and the like."—(*Pierre Edmund de Saint Florent*, France.)—24th April, 1885.

5,181. George Sylvester Grimston, 3 Mycenae Villas, Greenwich, S. E., Kent, for "Improvements in instantaneous shutters for photographic purposes."—27th April, 1885.

5,363. William James Lancaster, 6 Livery street, Birmingham, for "Improvements in instantáneous photographic camera shutters."—1st May, 1885.

5,364. William James Lancaster, 6 Livery street, Birmingham, for "Improvements in photographic cameras."—1st May, 1885.

5,367. Albert Pilley, George Arthur Cubley, and Job Preston, 4 High street, Sheffield, for "Improvements in portable stands for photographic and similar purposes."—1st May, 1885.

5,523. Eugen Himly, 22 Gt. St. Helens, London, for "Improved method of, and apparatus for, taking photographs by artificial light."—[Complete Specification.]—5th May, 1885.

5,527. Alfred Julius Boult, 323 High Holborn, Middlesex, for "Improvements in, or relating to, holders for photographic films." —(*George Eastman and William Hall Walker*, United States.)—5th May 1885.

5,677. William James Lancaster, 6 Livery street, Birmingham, for "Improvements in portable stands for photographic camera work, and for various other purposes."--8th May, 1885.

5,725. Alfred Julius Boult, 323 High Holborn, Middlesex, for "Improvements in photographic film holders."—*George Eastman and William Hall Walker*, United States.—[Complete Specification.]—9th May, 1885.

5,895. George Percival Smith, Beech Holm, Tunbridge Wells, Kent, for "Improvements in photographic cameras and camera stands."—13th May, 1885.

5,909. Ernest de Pass, 68 Fleet street, London, for "A process for copper-plate and relief engraving from photographs and tinted drawings."—(*Arthur Simon Joseph Miron*, France.)—13th May, 1885.

5,965. Edwin Underwood and Thomas Albert Underwood, 97 Camden street, Birmingham, for "An improved photographic camera."—15th May, 1885.

5,999. Benjamin Joseph Barnard Mills, 23 Southampton Buildings, Middlesex, for "Improvements in photographic apparatus." —(*Ferdinand Denis*, France.)—15th May, 1885.

6,076. Richard Rayner, 1 Queen Victoria street, London, E. C., for "A new cheap stereoscope."—18th May, 1885.

6,204. Edwin Lloyd, 115 Cannon street, E. C., for "Improvements in the ornamentation and preservation of photographs on transparent substances."—20th May, 1885.

6,359. Benjamin Constant Le Moussu, 28 Southampton Buildings, Chancery Lane, W. C., for "An improved process for producing plates for surface printing."—[Complete Specification.]—23d May, 1885.

6,368. James Robertson and Douglass Robertson, 96 Buchanan street, Glasgow, for "An improved mode of obtaining photographic negatives or positives and apparatus therefor."—[Complete Specification.]—23d May, 1885.

6,526. Harry J. Bovill, Grove Park, Chiswick, and John Aloysius Broder, 4 Brunswick Gardens, Kensington, Middlesex, for "The improvement of Horsey and other tobacco pouches, called 'The Album Photo Pouch.'" —29th May, 1885.

6,583. John William Ramsden, 2 East Parade, Leeds, for "Improvements in tripod stands for photographic and other purposes."—30th May, 1885.

6,742. Frederick William Hart, 8 and 9 Kingsland Green, London, for "Improvements in photographic cameras; specially relating to the focusing arrangements."—3d June, 1885.

6,831. Thomas Samuels, 53 Chancery Lane, London, for "An improvement in photographic cameras."—4th June, 1885.

6,973. Charles Wells, 25 Southampton Buildings, Chancery Lane, W. C., for "Improved means of obtaining photographic bird's eye views."—[Complete Specification] —8th June, 1885.

7,084. Herbert John Haddan, 67 Strand, Westminster, for "Improvements in instantaneous shutters for photographic cameras."—(Carl Lutken, Denmark.)—10th June, 1885.

Views Caught with the Drop Shutter.

Owing to a large increase in his business, J. N. McDonnald, of Albany, has removed his entire photographic stock to 582 Broadway, opposite the Delavan House.

Mr. Chauncey L. Moore, of Springfield, has recently completed the fitting up of his suite of rooms in the *Republican* building, and has one of the best studios in the State. The negative room contains 30,000 plates.

Mr. Enoch Root, the well-known painter of Venetian scenes, has become an enthusiastic amateur photographer.—*The Eye.*

Many amateurs with whom we have conversed on the subject of an amateur convention are in favor of it, and think it would be a grand success. The recent exhibition held in England, which was nothing more nor less than a grand convention, was most successful. —*The Eye.*

G. M. Carlisle, of Providence, is the treasurer of the Photographers' Association of America, and he is ready to receive your subscriptions which are due.—*The Eye.*

Arrangements for the next meeting of the British Association at Aberdeen on Sept. 9 are nearly completed. The last time the association met there was in 1859, under the presidency of Prince Albert. The president-elect this year is Sir Lyon Playfair, who will take the place of Lord Rayleigh.—*N. Y. Times.*

Considerable interest has been excited in Great Britain and other European countries by the "novelties" exhibition proposed to be opened under the auspices of the Franklin Institute, Philadelphia.—*N. Y. Times.*

Bulletin Register.

W. H. Jackson, Denver, Col.
A. E. Rinehart, Denver, Col.
H. S. Greenwood, Liverpool, England.

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ADVERTISING RATES.

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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

ANTHONY'S

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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Vol. XVI. SATURDAY, JULY 25, 1885. No. 14.

THE BUFFALO MEETING.

The photographers of America were never seen to better advantage than at the recent meeting in the busy city of western New York, and at the most successful meeting yet held by their association. The intellectual part of the programme was by far the best on record, and the tone and character of the papers are evidences that men of culture and refined tastes are to be found in the fraternity, and that in no inconsiderable numbers.

But no matter how good the programme may be in a convention of this character, the executive ability to carry it out must be of no mean order.

Too much praise cannot possibly be bestowed upon the Executive Committee of the Buffalo meeting for the most admirable arrangements made by them, both for the sessions of the association as well as for the exhibits and the display of pictures. And from all we could hear the moving spirit of the committee was Mr. H. McMichael, of Buffalo, the Secretary of the Association, who certainly left nothing undone that would tend to the comfort and general welfare of the association. We must here extend the most hearty thanks of the Bulletin for many acts of kindness during our stay in Buffalo. Indeed, the admirable arrangements for the reports of meetings could hardly have been better, and the comfortable quarters assigned to each of the photographic journals showed an unusual amount of kind thought scarcely to be hoped for amidst such a multitude of cares of more importance.

The method of obtaining the reports and distributing them among the various photographic journals is what the Bulletin has fought for many years, and feels glad that its efforts have at last yielded this desirable result.

Mr. Landy, the late president, also showed uncommon ability in conducting the meetings, where, very often, the anxiety of a number of members to be heard overcame their ideas of courtesy, and some sharp ruling became necessasy to restore order. Mr. Landy's decision of character and hearty good nature served him well under these circumstances.

Thanks to the admirable arrangements for reporting, we shall be able to give our readers a most complete report of all the meetings. They can judge of the character of the papers from those which we give in this issue, and which will be published in succeeding issues in the order they were presented at the meetings. We cannot too strongly recommend our friends to read them. This applies to the various discussions as well as the papers read. They are full of sound thoughts, criticism that is applied with charity, and suggestions for future work. They are food for thought and action for many months, and from the best minds in the photographic world.

The tendency of the papers read was to elevate the art side of photography, and we are very glad to see a feeling in favor of better remuneration for artistic work.

The exhibition of pictures was one of great beauty, and in artistic treatment of the subjects and execution of the purely photographic work it was admitted to be superior to any of its predecessors. We will not now attempt to give our readers our impressions of the beautiful productions we saw, but will reserve these thoughts for a future article, when we shall notice each display separately.

Coming now to the exhibits of the manufacturers, we cannot express too strongly our admiration of their generous and painstaking care to make the exhibition a success. When we take into consideration the time, trouble and expense necessary to make a creditable exhibit in cases of this kind, we feel personally grateful for the opportunity we have had to see so much ingenuity and inventive genius as was evident all through the exhibition at Buffalo. As with the pictures, we shall notice the various exhibits in detail in other articles; but will here say that the photographer that did not go to Buffalo has missed seeing what appears to be a revolution in modern photography, the new paper negative process of the Eastman Co. We shall have something further to say about this later, as we were particularly interested in the methods and the beautiful results obtained.

In the matter of exhibits, great credit is due the various gentlemen in charge of them. At the beginning of the meeting they were very much annoyed by leaks in the roof of the exhibition building, which necessitated the constant moving of the various pieces of apparatus. But the hearty good feeling with which they submitted to these annoyances was notable, and deserves the highest commendation. The gentlemen in charge of the backgrounds were particularly troubled by the water coming through the roof, and had the sympathy of the entire membership. Nevertheless we did not hear a murmur, but every endeavor was made to make the best of the circumstances.

The loss of the Music Hall by fire left the executive committee without alternative in the taking of the Arsenal. When the rain stopped everybody was encouraged by the sunshine and thoroughly enjoyed the exhibition. The meeting of old friends and the renewal of old acquaintances was a very pleasant feature of every day's visit to the Arsenal. For our own part, we had a week of unalloyed enjoyment. The meeting of so many prominent men in the photographic world was a very great pleasure, and we shall never forget the faces of those we met in Buffalo. To see and talk with men of whom the fraternity is constantly reminded by their contributions to the literature of the subject is a great privilege, especially when they are laboring for the same object, the advancement of the photographic art.

We cannot close without acknowledging our indebtedness to David Tinker & Co., of Buffalo, for many courtesies received by both the editors and publishers of the BULLETIN during their stay at the convention.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

SOME THOUGHTS SUGGESTED BY TRANSPARENCIES AT THE NEW ORLEANS EXPOSITION.

[By our Special Correspondent.]

OUTSIDE of the regular Photographic Exhibit, there was great use made of photography in all departments of the exposition.

But as it was mostly used in illustration or advertising—as an accessory and not as a principal—and any description would only be in the nature of a catalogue, I have not thought it of sufficient interest to your readers to give an extended description.

But there was one branch of the art more largely used and more prominently presented by the government and by individuals than I have ever before seen or known of its being used, and it suggested some ideas which I will endeavor to present.

The branch of photography I refer to is *transparencies.*

I had never seen so many or of such large size, and they were to me by far the most interesting part of photography. The State of Kentucky used them largely in illustrating her resources, and they attracted the attenton of everybody far more, I thought, than the same number of pictures of the same scenes in any other form of photography would have done. The General Government also had many transparencies illustrating Indian life, dress and personal appearance, which were remarkable for their large size—about 25 x 30—and although imperfectly lighted, also remarkable for their clear and brilliant presentation of the scenes they represented.

Indeed the clearness and brightness with which they stood out was startling when compared with the other forms of photography. The transparencies that were exhibited in the regular photographic section were shown at great disadvantage, as they were hung where they had nearly equal amount of light all around them, and therefore not half of their real beauty could appear to the observer.

The Gant exhibit was so arranged that part of that difficulty was avoided, yet enough remained to mar the full effect.

But the fine effect they gave even under difficulties suggested what possibilities of beauty there might be in an exhibition of transparencies especially prepared for them. Imagine an art hall—like that at New Orleans—surrounded by light on all sides, yet none admitted, except what came through the pictures themselves arranged on the walls in the usual form of art exhibitions, except that I would arrange all the small ones below for near view, and all the large ones above for more distant effect.

Imagine, I say, entering such a hall where the walls were filled with large pictures of all classes—portraits, landscapes, figures, whose lights were *light itself.* How far more brilliant than dull paper or opaque pigments such pictures would appear. What richness of coloring could be shown ! What strength and vigor of contrast ! What softness and delicacy of detail ! What an extension of possible effects at both ends of the artistic scale ! Even the beauty of the rainbow—evanescent and intangible as it is—could almost adequately be presented. Such pictures could be far more perfect and true to nature than any shown in cathedral windows. Yet combinations of colored glass and photo-transparencies could give all the beauty and rich luminous coloring of the one, with all the truth of form and perfection of detail that characterize the other. Photo-transparencies as shown in ordinary windows lose half their beauty. A small space of picture shown against a broad glare of light is at great disadvantage. I would suggest that another year at our Photo Convention a room be prepared expressly for transparencies, with the light properly filtered and subdued to show them at their best, and that all who are interested in transparencies be invited to send their best for exhibition and comparison.

Transparencies are undoubtedly the most beautiful form of photographic representation that has ever been devised. They are veritable *light paintings* in a double sense, for they are both made *by light* and *of light*, thus giving double possibilities of richness and beauty.

June, 1885.

THE DIGNITY OF THE PHOTOGRAPHIC ART.

BY DR. E. L. WILSON.

Paper read before the Photographic Association of America.

Soon after the July number of the *Philadelphia Photographer* had been sent out, an "artist" friend of mine came to my office and expressed a hope that I would not risk my reputation by addressing you upon the subject announced as my topic—

"The Dignity of Photographic Art."

For, said he, photography is not an art; and secondly, I cannot see where the dignity comes in.

He was very curious, he said, to know how I was going to wriggle myself out of such an embarrassment as I had brought upon myself. Accustomed as I was to having such assertions, I answered, "I do not know," when he made his departure with a look of pity upon his face, which I shall not soon forget; and even now, I confess, I do not know how I am to wriggle out of the embarrassment which has been brought upon me by an otherwise excellent secretary, by placing me first upon the list to address you. I ask your forbearance while I try.

Before I can say much for the dignity of photography, I must, I suppose, in order to make happy my painter friend, establish the fact that photography is an art, and that its productions may be justly considered as works of art. I will endeavor to be brief. I must, I suppose, use somebody's artistic measuring rod as my standard. I will choose one of the sort that is popular among painters, and one whose honesty cannot be questioned.

During the past winter it was my privilege to listen to a very learned talk by the distinguished orator, Monsignor Capel. His topic was "How to look at pictures." He began by explaining his understanding of what "Art" meant and then tried to reveal its rules, and to explain how to understand whether a picture was or was not painted according to the said rules. He maintained that art does not consist in simply representing the person or scene as it is, as photographers and low-grade artists attempt to do. Many think a likeness, or an illusion, to be the first thing in art; "but," said the reverend orator, "illusion is not art." Instantaneous photography pictures you just as you are, but this is not art. A photograph can never be a work of art, though it may be artistic. And this is true of a painted portrait. It may have form, feature, color, and be true as to every detail of face, hair, body, etc., and yet it may in no sense be a work of art. You ask me, then, In what does art consist? A French author has answered the question for us, in saying that "style is the man." We all have our peculiar way of doing things, our individuality. This may illustrate what I mean by art. The portrait painter of the first order does not represent upon canvas the form, figure and appearance of the subject; but he studies the life, temperament and character of the one he desires to paint, and fills himself full of the ideal man; and this he forms out in living thought, and so his picture is a representation of his own conception, a creation of what he has conceived the person to be. A second or third-rate artist, however, will not produce a picture that is lifelike, though he may delineate carefully and particularize every detail.

Furthermore, declared the learned orator, and with consummate truth, in every work of art the mind of the painter must be so expressed that we discern both the thought and the style of the artist. And in order to appreciate properly the work of the great masters, we must place ourselves in their position, and endeavor to possess ourselves of the great thoughts which were in their minds. Raphael never painted but to get faith a dogma. In Titian's famous compositions we could always discover the effort to secure sympathy between the figures and nature.

And thus far only did our orator reveal to his audience the rules of art, not advancing one thought as to the rules and forms of composition, or of chiaro-oscuro. His method was a wily one; for he knew full well that thus he could stab the ordinary painter, and the progressive photographer, where it would hurt the most. He did not tell the whole truth. I maintain, in face of all his arguments, in face of his assertion that "a work of art is a conception, but that a photograph is only a likeness," that a photograph can be both, while a painting is very rarely both.

During my work at the World's Exhibition last winter I had no skylight, but when people came to me for likenesses I asked them out in the beautiful park, by the lake, or near the rustic bridge, or beneath the moss-hung live-oaks; and there, in groups of my own conception, arranged them agreeable to the rules of art, as I had studied them, and made a likeness of the whole conception.

Am I a presumptious impostor, an anti-æsthetic Bohemian, if I flatter myself that some of the results were worthy to be called works of art? If not, then why do painters buy them for studies?

Monsignor Capel, though he may be a fair amateur painter and a clever amateur photographer, need not leave his own native England to discover some grand works of art in the conceptions of H. P. Robinson, of Tunbridge Wells, painter and photographer, likeness maker and artist, in every sense.

Rather would I die than give up my faith in the ability of photography to produce works of art.

When we look at a picture we should become one with it. It will talk to us, and we may talk to it. We first examine lines—its light and shades, and decide whether or not the rules of art are complied with. And then we endeavor to discover the conception of the artist, and study out to what extent he has secured what he attempted. How often have we seen the same subject treated in widely different ways, by various painters—how piously photographers will pose and light the same person!

Take the Madonnas for examples: Engravings of them will show you just what I mean. In the Dresden Madonna we see the staring eyes of the Mother of God expressing surprise that she should be chosen for such an office. In another, the true, tender feeling of the solicitous human mother predominates, while in a third, the artist prefers to secure a look of humility and timidity. These differences are differences of conception. And who shall say to us that we cannot, if we will, secure such differences with our cameras; that we cannot, if we will, secure all the elements of art in our pictures, both under the sky and under the skylight.

The moment I look upon a photograph which approaches a work of art, I involuntarily begin to measure it by the rules to give it as to the intention of the "likeness" taken who produced it, just as surely as I do, when I am feasting in a gallery of paintings, and even now I am impatient to complete this reading that I may go into the adjoining hall and feed upon the works of art there. And now, having as I believe, established the claims of photography to a place among the arts, what, may I ask, do we understand by the dignity of our art?

I maintain that it is that element which consists in its being thoroughly believed in, respected and sustained by those who practice it; that its dignity is commensurate with the amount of dignity thus imparted to it by the parties mentioned, in the ways mentioned, and by the quality of work which they produce by its help. I need not add even a partial list of its accomplishments in order to maintain its dignity. We all know how the stars are caught by its aid as they whirl through space, how the pale-faced moon is mapped for us, how the mysteries of the ages are revealed, how science is helped by it, how art and industry employ it as a right-hand workman, how it brings the beauties of the world to every door, how it gives the most truthful representation possible of "the human face divine"—how it almost creates.

With all its works and ways we are familiar; they alone would uphold its dignity beyond all question if those who practiced it do their duty just as well. That, alas, I fear, they do not. It seems to me that I never knew an art to hold so low a position in the public estimation as it does now. It seems to have become so cheapened as to have scarce any market at all. The idea seems to be growing that photographs cost nothing to produce, and the ignorant patron cannot or will not regard one quality of production worth more than another. He holds that because he sees cheap prints hawked about the streets, that good ones cannot cost any more, and the artist photographer must argue his cause every time he asks a living price for his work.

My countrymen, this is indignity and not dignity! How long shall it last? I have heard the poet sing: "All my life long I have beheld with most respect the man who knew himself and knew the way before him; and from amongst them, shows considerately that the clear foresight, not a blindfold courage; and having chosen with a steadfast mind, pursued his purposes." But, alas! I fear many of our coworkers have "chosen" well enough, but have not "pursued with a steadfast mind."

Our only hope is in a wondrous change. Last Saturday night, as I came hitherward, I looked out from my seat and saw the great vale of spray which arose from nature's mightiest wonder—the greatest living picture—Niagara Falls. I felt that I was coming into a great presence. I took off my hat and gave way for a moment to calling up memories of the past. Then when I came to full view of the great cascade, and again heard its mighty voice calling to me, an oppression of awe came over me. Never before was

I so impressed with the dignity of this scene as at that evening hour.

And just such feelings of respect and wonder and endearment should and would our art awaken, if its votaries would maintain its reputation as they should. You ask what shall you do? Make our own lives all they should be. What shall you do? Produce better work. What shall you do? Join heart and hand in securing full value for what you produce. Oh! what a beautiful structure could our most marvelous of arts become if we but willed it.

About ten days ago I stood near the base of the recently completed Washington Monument. What a mighty work it is, lifting its aluminum apex above the clouds! Stone by stone aloft it rose, each addition increasing its dignity, its pure whiteness contrasting with the clouds beyond. How proud is the whole nation of the glorious shaft! How proud were other nations and individuals to give a block toward its creation!

So say we all, if we will add a block to our artistic structure, which in time will lift its proud apex far above calumny and maintain it as a highest of the arts. The clouds of libel and scandal will only make it the more beautiful by contrast, and every time we contemplate it we shall be able to give a loud and hearty huzza for the dignity of the photographic art.

HOW TO SEE.

BY J. F. RYDER, CLEVELAND, O.

Read before the Photographers' Association of America.

A GOOD deal may be seen by an observing man by simply keeping his eyes open. It is indeed a popular fancy that that is the only necessary effort to complish that simple feat. A positive man might be ready to bet five dollars that was all there was to it, while others lean to the belief that through the other faculties enough may be seen to satisfy many a doubt shrouded in darkness. A man may see things he never saw. What to one man is as plain as the nose on his face, is to another oblivion. The man who fully sees, sees with his nose, with his ears, with his fingers, with another man's tongue, as a blind man sees with a string tied to a little dog, or with the end of his cane punching the sidewalk.

Without attempting, however, to prove second sight, or double sight, let us consider the advantages of seeing carefully and intelligently. Seeing carefully or carelessly is matter of habit, which, when once formed, is as easily followed as breathing. The habit of observation becomes a pleasure and a study not to be put aside and taken up at will, but the following out of the routine of life.

As considered in the pursuit of our profession, the portrait photographer has a constant study in the faces he meets, and in watching the play of light and the fall of shadows over them; while the landscapist is adapting a tree, a clump, or a rock for a foreground, and suiting it to a middle distance. I speak of the habit as in my own experience. Although I have not made a business of personally handling the sitter and camera for the past fifteen years, the habit formed nearly forty years ago has been pursued with as active diligence as when I was my own operator. If I fancied I had claims upon the Democratic party and wanted a post-office, and was interviewing President Cleveland with a view to that end, while showing him what heroic work I had done in his interest and how evidently he was occupying the chair through my efforts, I should at the same time be mentally lighting his head for a portrait. The visitor in my house who by his conversation seeks to interest me, or whom I am trying to entertain as becomes the host, is turned to account as a study, upon whom I am at work, discovering the most favorable point of view and the best direction to light from. I do not feel I am taking an unfair advantage of him—I am simply studying from force of habit and because I cannot help it. Whether in the business office, the private house, the church, the street car, wherever the light falls from a given point, and particularly if favorable to developing strong characteristic points of a head or face, immediately the work commences.

The unconscious model gives, without the asking, naturalness and ease of pose which would be sought for in vain with a camera pointed toward him. Then is the time to pursue the study, to carefully observe each point of vantage and to store up the knowledge for future use. Accidental findings are as good as knowledge sought for at a cost of much labor. Good teaching in free leasons is constantly offering itself. Those who choose may profit; it is only a question of seeing or not seeing. I remember some years ago a particularly fine sunset over Lake Erie, as I was homeward bound from the east on the Lake Shore Road. The color and cloud effect was gorgeous. To see it was to stir one's love for the beautiful. I was quite enraptured; could almost fancy I was looking into another world. It was like enchantment. The impulse to have some one sympathize with me in the pleasure inclined me to call the attention of a man in the seat just ahead of me to the grand spectacle. I nudged him and pointed at it. He looked out of the window and then inquiringly at me, showing clearly he did not understand. I then said the beauty of the sunset was what I pointed at. He looked sort of bewildered, turned to me again and said: "Yes, it's red, ain't it?" What to me was a glory and a joy, was to that man something red. Had it been a farm house, or barn made red from a paint pot, it would have dilated his soul quite as much.

From the habit of observation comes the study of comparison, an easy way of finding a fitness of things as considered in relation to each other. And here rises, as though to answer a roll call, the three great powers most valuable to any business or profession–Harmony, Order and System. They may be considered the Captains of three potent forces, which when truly observed are invincible. Applied to the simple needs of our business, as aids to success, their value is as clearly shown as to the railway builders of our country. Considered in a business sense, the advantages of tasteful and harmonious fittings and furnishings of the photograph establishment, whether upon a scale of extravagance or the quiet simplicity of modest means, is a thing never to be overlooked. The visitor is favorably or uncomfortably impressed on entering a photograph studio.

The person of no taste will not be shocked with pleasant surroundings; a place may be never so attractive, he will take no exceptions. On the other hand, the esthetic, or finical man, might feel such discomfort at the violations of taste and harmony frequently found in the reception or business rooms of photographers as to have his confidence shaken in the skill of the proprietor, and incline him to look farther.

It may not be found in your bibles that a five-dollar note from the pocket of a dude is as good as that of the puddler of iron, or a tanner of hides; but it is just as true nevertheless. A well-scrubbed floor is better than a dirty carpet, tidy simplicity better than luxurious shabbiness. An orderly establishments is attractive and interesting; it is the key-note to the proprietor's character and his business success. The value of tidiness, clean rooms, clean hands, clean dishes, clean character and habits, cannot be overestimated.

It is well to see that visitors and patrons be received with politeness and respectful attention; that while in the hands of the operator the sitter be brushed with the grain, and care be taken to encourage a comfortable cheerfulness. A rude or surly attendant can tear down faster than the proprietor can build up.

To see your sitter's good and bad points photographically is your duty. To make the most of all the favorable, and to leave untold the uninteresting ones, is what you owe both your customer and yourself. Make your camera see the same as you do. When your sitting is made, the plate developed and brought into the light for final examination, when you stand over it as judge and jury, *be honest.* Don't compromise with an indifferent result; if it is not right, it is wrong. The proper question to ask yourself is: Can I better it? If yes, do it at once; your conscience and good judgment will uphold you in the conviction of having done your full duty. Your evident satisfaction impresses your sitter, and has much to do in settling any doubts he might entertain. If the photographer would inscribe a mental motto which should read, *Can it be bettered,* and hang it conspicuously upon the front wall of his mind, where it should be in full view and religiously consulted and followed as the text of his daily work, it would stand as a true guide-board upon the cross-road of success or failure in his business. If there be a better talent than to see well, it is to perform fairly and fully all that can be seen which is profitable to put into a man's work. And now, my brother photographers, assuming that you have seen as I have tried to show, may I ask you to look with me at the present status of our art, and at its possible future. We stand to-day forty-five years old. From the bluish uncertainty in a little box-like case which could be seen with difficulty, after much twisting, then *as a wonder* in 1840, we have only to look at the exhibition in the hall below to notice the wonderful progress made in forty-five years. In these years hundreds of thousands of people have found employment in departments of work tributary to the requirements of and in the practice of photography. Millions of money yearly flow through the channels of its traffic. Scarcely a home in this civilized world, from the palace to the hut, but in which will be found in costly or modest form the products of the camera. The images in shadowed form of the loved and lost are treasured beyond comparison. Photography has contributed to the interest, the taste and happiness of mankind; it is entitled to place and consideration. Many of us have traveled a long road with it, followed it over the rough and smooth years, in a manner have grown up with it. Now in the strength and glory of its prime we have it. What shall we do with it? Is it something to be cherished and protected; to be kept respectable; to be made more perfect; to toil for, and be proud of? Or is it to be prostituted and destroyed through the careless indifference which comes of low prices?

The future of photography is in peril; it is threatened by the folly of smart Alicks and cheap Johns. Shall the men who have given the best years of their lives to the study and honorable practice of the art, whose aim has been to secure early all valuable improvements, who have expended money by thousands, and taken honest pride in producing masterly works—shall these men be controlled and degraded by those who have no pride or interest in the art beyond getting money by flooding their cities with inferior and carelessly made photographs? Shall honest endeavor and true merit yield to cheek and piracy? Gentlemen, to this you must find your own answer.

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THE PHOTOGRAPHIC MERCHANTS' BOARD OF TRADE.

THIS Board met at the Genesee House, Buffalo, during the week of the meetings of the Photographers' Association. Mr. DAVID TUCKER, the *vice-president*, presided in the absence of President Hiram J. Thompson, Mr. D. K. CADY, of Cincinnati, being at his post as *secretary*. About 30 members were present, representing houses in different parts of the country between the Atlantic and the Mississippi. The place for holding the next convention of the board was discussed and New York selected as the place, the month of February being selected as the best time. The report of the Arbitration Committee was received and the reports of the committees on History and Statistics, Catalogue, and Bureau of Information were considered.

Messrs. V. M. Wilcox, W. Irving Adams and Edward Cope are the Committee of Arrangements for the New York meeting.

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A BEAUTIFUL BANNER.

OUR publishers are greatly indebted to David Tucker & Co., of Buffalo, for the beautiful silk banner that hung over the large show case in their exhibit at Buffalo. The design was very artistic, and was admired by all who saw it.

OUR PUBLISHERS' PRIZES AT BUFFALO.

THE prizes offered by our publishers for the best exhibit of photographs made on the Stanley Dry Plates brought out quite a number of fine pictures. There being an objection raised to the appointing of a committee by the President, Mr. Stuart, of Hartford, was asked to act as one of these judges, and he selected Mr. Potter, of Indianapolis (the next President of the Photographers' Association of America), and these together selected Mr. Armstrong, of Milwaukee.

These three gentlemen decided upon the merits of the pictures presented, as follows:

First prize (for large pictures), H. MCMICHAEL, of Buffalo, Secretary of the P. A. of A.

Second prize (for cabinet pictures), J. M. BRAINARD, of Rome, N. Y.

The prizes were on exhibition at Buffalo, and were much admired. Much surprise was shown at the limited number of competitors; but as the giving of the prizes was thought of at the last moment before the exhibition, the fact of their being open for competition was not generally known.

There were other fine exhibits on the Stanley Plates, notably those of SARONY, of New York, and HARDY, of Boston; but neither of these gentlemen will ever enter a competition of this character, being abundantly satisfied with their well-deserved reputation already.

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PHOTOGRAPHERS' ASSOCIATION OF AMERICA—1886.

THE next meeting of the Association will be held in St. Louis, and the date proposed is some time in the month of May. The following officers were elected at the Buffalo meeting to serve at St. Louis:

President—W. H. POTTER, of Indianapolis.

Secretary—H. McMichael, of Buffalo.

Treasurer—G. M. Carlisle, of Providence.

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PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

Minutes of the stated meeting, held Wednesday evening, July 1, 1885, the President, Mr. Joseph W. Bates, in the chair.

There being no business brought before the meeting, Mr. Wood asked advice in regard to developing a plate which had been exposed on an oil painting, in which there was a large proportion of very non-actinic color, contrasted with a certain amount of strong high light. This sort of subject naturally presented great difficulties for its proper development. A long exposure was necessary to obtain the detail in the dark parts. The effect of the violent contrast was to be counteracted by keeping down the amount of pyro and bromide and increasing the ammonia or other alkali, and also by using the developer quite dilute. This treatment would tend to bring out the detail throughout the picture, and as far as possible keep down the strong contrast between different portions of it.

Some interesting instantaneous pictures were sent by Mr. McCollin, to show the work of a new exposure, the invention of Mr. Barker, which was soon to be put on the market. The exposure was made through a slit cut in a curtain which passed directly in front of the plate, and the pictures shown were most decided proofs of the efficiency of the shutter and of the rapidity of the Inglis plates upon which they were taken.

The subjects were those of figures in most rapid motion — running, leaping, bicycle riding, etc.—and all were remarkable for their sharpness and full detail. The bicycle pictures represented wonderful feats in that line, such as riding down a flight of stone steps on a bicycle with the back wheel removed, riding over a gutter without back wheel or saddle, and leaping from the ground while riding a single wheel provided only with the pedals.

A shutter was also shown constructed on the plan devised by Dr. Moris J. Lewis. A disk of cardboard was arranged to rotate behind the lens, with a hole through which the exposure was made. At the center of the disk was a small pinion, into which fitted the teeth of a segment of a large cog-wheel. Rubber bands attached to this segment imparted to it rapid motion, which, on being transmitted to the disk, was greatly multiplied. Great rapidity could be attained by the shutter, with no perceptible jar.

Messrs. Wilson, Hood & Co. submitted for inspection samples of a new style of mount, known as "ragged edge," the edge having the appearance of being roughly torn to shape and size.

Mr. Carbutt showed a number of prints of Yellowstone scenery, from 20 x 24 negatives made by Mr. F. Jay Haynes, of Fargo, Dakota, which were greatly admired. The negatives were made on Carbutt's special plates, and Mr. Haynes had stated that, using one plate from a lot of 36 for trial, 35 had been exposed with the loss of only two, the remaining 33 all producing good negatives.

Interesting pictures were also shown by Messrs. Barrington, Corlies, Wood and others.

Adjourned.

Robert S. Redfield,
Secretary.

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PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

Buffalo, N. Y., July 14, 1885.

The sixth annual session of the P. A. of A. was convened this morning in the Arsenal building, at 10 o'clock. The association was called to order by the President, Mr. Landy, and there not being a quorum present, on motion of Mr. Cope, of Philadelphia, the association was adjourned until 3 o'clock P. M.

AFTERNOON SESSION.

The association met at 3 o'clock P. M.

Mr. McMichael—This is the day and the hour for the opening of the sixth annual convention of the Photographers of America, and I have the honor and pleasure, on behalf of the photographers and citizens of Buffalo, to most cordially welcome you to the hospitality of the city, trusting that your stay here will be one of pleasure and profit.

That is not all. We hope your stay here will contribute largely to our satisfaction and experience. Entertaining these feelings, I welcome you with pleasure to this city, to which, aside from its great terminal aspect, we attach an especial significance. You will come here not alone with pleasure and experience; not alone for a brief season from the busy scenes of life and from the present cares of business, but we trust you will come to advance the interests of photography and to elevate the fraternity, as well as for the building of a foundation whereupon you shall hereafter erect a future structure.

In the adjoining hall are to be found the best results of genius, the experience of the most advanced workers; results of every description known to photography. I behold this assemblage with pleasure and pride, and I trust that the time is not far distant when every photographer in America can hold up his head with pride and say: "I am a member of the P. A. of A." [Applause.] I am not expected to say much at this time, because I have been talking for about six months, and I am getting pretty tired, and you will excuse me from saying anything further. I have now the pleasure of introducing to you a man who thirty-five years ago was buffing away at an old daguerrotype plate; a little further on he becomes famous; a little further on he wins laurels across the sea, and a little further on he wins laurels in uniting his works with those of Shakespeare in the Seven Ages of Man. He has now the pleasure of holding the highest office in the gift of this association, and it is with pride that I now introduce to you our President, James Landy, of Cincinnati, Ohio.

JAMES LANDY—Mr. McMichael, on behalf of the association, I thank you, and through you the hospital people of Buffalo, which is rapidly becoming known as the "Convention City." On every hand are the evidences of the *con amore* spirit with which you have performed your duty, and largely to you do we owe our meeting to-day in this beautiful city of the Lakes.

It is your prompt action to which we are indebted for the use of this great Arsenal, secured in a few hours after the burning of Music Hall. The thanks of the association are also due, and no doubt will be formally extended, to Colonel Thomas Ward, for never before has this Arsenal been used for any other than military purposes.

The convention is now open for business. The calling of the roll is the first business in order.

On motion, the calling of the roll was dispensed with.

The President—The reading of the minutes of the last session is now in order.

On motion, the reading of the minutes of the last session was dispensed with.

The President—The report of Standing and Special Committees is now in order. The chairman of the Executive Committee, Mr. W. A. Armstrong, of Milwaukee, will make his report.

Mr. President, Ladies and Gentlemen: A few years ago a fellow member of our craft made a call upon a few stalwart photographers, soliciting aid as a guaranty fund to help bear the expenses of a place to convene. The call for the meeting followed, and the ready response it met was the occasion for launching upon the sea of life a little bark known to the world as the "Photographers' Association of America."

In the period since, the cruise of this craft has been an eventful one. With adverse winds she first drifted East; then, with a prosperous tide, West; again, South; and now, in the fifth year of her pilgrimage, she casts anchor near the great Falls of Niagara, registered as a full-fledged ship.

The voyage of our craft has not been all smiles and sunshine; she has had to breast the winds of Jealousy, avoid the shoals of Cupidity and round the bar of Impotency to get here. But as she drops anchor in the beautiful city of Buffalo, she is free from debt and freighted with a rich cargo. [Applause.]

The number of members attending the last three conventions has not varied materially. There are many strange faces to be met at each new place of meeting, but there are a corresponding number who remain away on account of the change in location. Each separate town at which the conventions are held appears to be the nucleus for a certain surrounding territory, whose resident members seldom venture without the pale of its limits.

Thus we are continually adding new names in one State, who, from lack of attendance, drop from the list in another; to avoid this, and keep up the prompt payment of the annual two-dollar dues, the new membership fees were raised to five dollars.

There are a few old war horses in the profession whose presence can always be counted upon. Year after year rolls on and age leaves its mark upon the veteran, yet the distance is never too long or the obstacle too great to prevent his annual appearance.

And right here I would say, I do not think any professional photographer can afford to stay away from these gatherings, for, while the old in years renew old-time memories, the young can but glean new ideas to advance their personal interests and fresh hopes for an upward career.

And now, gentlemen, as I look upon the happy faces of the respectable assemblage before me, I can but repeat that the affairs of the association are in excellent condition and

I can only hope that your deliberations here will result in keeping them so.

W. A. ARMSTRONG,
Chairman of Ex. Com.

The *President* then called for the reading of the report of the Committee on the Progress of Photography. Mr. GENTILÉ then read his report as follows:

PROGRESS OF PHOTOGRAPHY.

Many would claim that there has not been any marked advance in our profession since our last convention. It is true, we have no new inventions to chronicle, but that photography progresses in spite of exceedingly dull times is evident. There is greater knowledge of photography among the public than there ever was. Photography is in greater demand than ever. It is now introduced in nearly every branch of business and profession. Take, for example, our own city of Chicago. The police department has added a photographic outfit as a necessary appendage; the detective camera is now called into play when any important event occurs. Our hospitals are not now considered complete unless a skylight is available, to enable doctors to photograph their "brilliant" cases, which they most successfully do. I predict it will not be long before every newspaper of any importance will have a photographer attached to its staff.

Amateurs are rapidly increasing in numbers all over the country; they are forming numerous societies, which have shown in the past year that they are willing to work harder than our professionals are willing to do to disseminate freely the information they possess. The amateur frequently has more leisure than the professional, and is imbued with an ever-increasing desire to obtain "more light." The professional is naturally more jealous than they of his little secrets, if he has any. We expect to get the majority of our improvements from amateurs, because if we look back into the history of photography, and consult the authors who have written on the subject of photography, and from which our knowledge is derived, we find that the majority of them were amateurs, and we see no reason why we should expect to learn less from amateurs now than formerly. It must be admitted by all that during the past year the majority of papers read on photography have been by amateurs, showing conclusively that the amateur will occupy a prominent rank in our literature, as they have always done in Europe.

During the past year, very creditable exhibitions of photographs, both by professionals and by amateurs, have been made at New Orleans, which attracted the attention and admiration of visitors. Many improvements have been made in the manufacture of dry plates. As a matter of course, the past few years' experience has taught the manufacturers many lessons, which they have not been slow to avail themselves of. There has certainly been a most marked reduction in the prices of plates, which has benefited the photographer.

Commercially the past has been a bad year for photographers; prices have been reduced lower than ever before, and it is impossible to foretell the time when we may look for an amelioration of the present condition of affairs. It is very doubtful if this convention now in session can conceive any plan by which photographers can be made to unite to some general agreement which would enable them to obtain better remuneration for their labor. The stagnation has been universal in Europe, as well as in this country; however, let us hope for better times in the near future.

In Europe, recently, a most successful exhibition of works by amateurs has been held, and, at a day not far off, we shall expect to see a convention of amateurs held in the United States.

Photographic journalism has made considerable headway in the West. A little over a year ago, there was not a weekly photographic journal published here; now, we have two. The *Photographic Eye*, of Chicago, was the first weekly published, and later, the *Photographic Times* issued a weekly paper. ANTHONY'S BULLETIN, which was a monthly, is now a fortnightly. Dr Garrison has issued a quarterly.

Among other improvements in photography, we must not omit to mention that the Eastman Dry Plate and Film Co. has introduced a paper negative, and also a film which is stripped from its support after development.

Many improvements have been made in the manufacture of bromo-gelatine printing paper for positives, and we may look for still greater improvements in the materials to be used in their manufacture.

There is no reason why we should not give greater attention to the making of positives direct in the camera, especially as low rates for photographs predominate in many of our large cities. Ere long we may expect to be furnished by our stock dealers with plates ready coated with an emulsion, so that we need not resort to the bath collodion for even a tintype. We have seen a good tintype made in this manner; consequently we should not be surprised to see the much-despised tintype brought promptly to the front.

The past year has not been remarkable for the number of improvements that have been introduced for developing dry plates, but doubtless much valuable information on this subject will be obtained during this convention.

Great advancement and much skill and ingenuity are observable in the manufacture of apparatus used by members of our profession. The great increase in the demand for light, portable field cameras has made our manufacturers vie with one another until they have almost arrived at perfection, as will be seen in the varied and magnificent display at our convention.

Since we last met photography has lost a friend whom we all respected. He was a man universally loved by all who knew him, and it will be a long time before his place can be filled. Those who knew him well are fully aware that the world will never know of the many acts of kindness that were performed without the least ostentation by that noble-hearted and true gentleman, the late Mr. H. T. ANTHONY, of New York. His memory will be revered by all of us. Few men have done as much for the advancement of photography as he, and under the circumstances some appropriate testimonial to his memory should emanate from this convention before we adjourn.

In Europe one of the chief losses to our profession has occurred in the person of Lord Mayor Nottage, who built a most successful photographic business, which was the means of raising him to the highest and most honorable position attainable in the first city in the world, the great city of London, of which he was its chief magistrate at the time of his death. This is the first instance on record of a photographer, by his business tact, perseverance and ability, attaining to so high a position. It is an example worthy of imitation by all of us.

Another death in England occurred at the time we were holding our last convention in Cincinnati, that of Mr. Cornelius Jabez Hughes, a well-known photographer and a man who was universally esteemed. Photographic journalism in Europe has also suffered a loss in the death of Mr. Henry Greenwood, the founder and proprietor of the *British Journal of Photography*, which his ability and energy made the most successful photographic journal ever published.

In conclusion, it forcibly occurs to one who studies the progress of photography in this country that greater advancement would be made in our knowledge, and also a better feeling would exist among the fraternity, if some means could be devised to induce the leading photographers in our cities to attend the meetings of the photographic societies, and to devote a little of their time to the promotion of the best interests of the profession in which they make their living, and to which we all owe a debt.

Mr. CARBUTT, of Philadelphia, moved that the paper just read by Mr. Gentilé be published. Agreed to.

The *President*—I will now announce the names of the following gentlemen as the nominating committee for the officers for the ensuing year: J. F. Ryder, Cleveland, O.; G. Cramer, St. Louis, Mo.; E. Cope, Philadelphia, Pa.; D. R. Clark, Indianapolis, Ind.; G. A. Douglass. This committee will make their report to-morrow morning.

The next in order will be miscellaneous business.

Mr. RYDER—Our programme was perhaps laid out before we knew of the grand programme to-morrow at Niagara. It has been mentioned by a good many that the crowd would be so great there from all parts of the country that the photographers would stand a small chance, and it would only be a day of discomfort instead of a day of pleasure; so, in view of all this, I move you that the trip to Niagara Falls be postponed until another day—say the day after.

This motion was seconded by several, and agreed to.

The *President* then read his report.

Fellow Members of the Photographers' Association of America:

Without trespassing upon your valuable time, it seems well that I should sum up the situation and the prospects. As an association we have made wonderful progress. Each year has marked an advance of which to be proud, and now we find in the Main Hall an exhibit excelling that of any former convention in the superiority of its photographic work, while the manufacturers and scenic artists have also eclipsed former efforts. With a feast for all lovers of our beautiful art as a stimulus, there is a bright prospect of an interesting time. The reunion at Cincinnati was a memorable one, reflecting credit upon the officers who conducted it. It shall be our effort to do as well. The Executive Committee have spared no effort to achieve success, and failure will not be the result of their leaving any stone unturned. I trust that our deliberations will be harmonious, and productive of the general good. Valuable papers on themes of great interest to each of us are to be read, and attendance upon the daily meetings is urged upon all. If earnest attention is given the discussion, every man of us will return to his studio well repaid for the time given to mutual consultation. Perhaps the most vital matter to be considered by you is that of prices. It had been my intention to prepare a special paper on this subject, but I have concluded that it will be better to leave the matter open for debate and action, without more than general suggestions. Were it not partially from the universal depression in all kinds of business that the profession is suffering from, and were the trouble not to pass away with the coming of good times to the country at large, the financial outlook for photography would be appalling. The low prices at which photographs are being made is degrading, without bringing about the desired result (steady sales), for people cannot be forced to purchase what they do not want at any figure. A brief sensation may be created by making a picture at cost, and sending a carriage for the subject; but it is short-lived, and the result is humiliating. We can never have the respect accorded other professions if we have none for ourselves. Unless fair prices can be maintained, young men of ability will not continue to enter the profession, and its future need not be pointed out. I most earnestly hope that the convention can solve the difficult problem, and find some means to change the downward course upon which we are drifting.

It seems to me important that every member should make an exhibit of his work at the annual reunions, and to be also desirable that we should reciprocate, when possible, the courtesy of our foreign brethren in sending to our collection such noble specimens of their work. The work of the photographer has great fascinations, yet it is so filled with detail and accompanied with vexations, that no class of men more need relaxation.

This it is proposed that our annual reunions shall furnish, as well as benefits from an educational standpoint. The Executive Committee have therefore arranged an excursion for to-morrow. It goes without the saying that it is to Niagara Falls, standing as we do almost within hearing of the roar of the great cataract—Mecca ot all artists.

Mr. E. L. Wilson, of Philadelphia, was then called upon to read a paper on "The Dignity of the Photographic Art" (see preceding pages).

Mr. GENTILE, Chicago—I move, if it be in order, that the association tender a vote of thanks to E. L. Wilson for his very able paper which he has just given us. Agreed to.

The *President*—The next subject will be a discussion on the deterioration of the gelatine dry plates. It is something that is very important. We all see that there is a deterioration going on, and we would like to have the subject well ventilated. Can any one give us any points on this subject? If so, we would like to hear them.

Mr. BELLSMITH—I would suggest that Mr. James Inglis give us some remarks on this subject.

Mr. INGLIS—I would be very happy indeed to say something on this subject, but I know so very little about it that what I would say would be of very little interest to this audience; but what I do know about them is this: that there are some plates that do not deteriorate, and there are others that do. [Laughter.] Now, that is about as much as I know. [Increased laughter.]

The *President*--There is no deterioration of the Inglis plate. He don't know much about that.

Mr. INGLIS—You may guess at that if you like; it is a very good guess.

Mr. Cramer was then called upon.

Mr. CRAMER—I don't know what I should say about the deterioration of dry plates. I expected first to hear the facts upon the part of the plaintiff; then I would take the side of the defendant.

The *President*—I, for one, have noticed a deterioration in dry plates that I have on hand for a long time. This I have thought was caused by the separator. I have thought that there was some deterioration going on from that cause. I think that a fresh plate is better than an old one. I don't know the cause of it; I naturally supposed that it was the separator; some material in the separator. Now, I would like to have somebody who knows something about the subject give us his experience. We all know that it is very important if we want to take a lot of plates to Australia or California, and be gone five or six years, that we want to know whether we can depend on them or not. If they should change it would be very unfortunate.

Mr. CRAMER—I did not understand the point at first, whether you wanted to talk about the deterioration of the plates or the deterioration and the fading of the negatives. I now understand that you are speaking of the deterioration of the plates.

The *President*—Both. I notice that the plates get a little thin after some time has elapsed.

Mr. CRAMER—Now, as far as the deterioration of the plates is concerned, I believe that there is a great difference in the plates made by different persons. For example, those made with free ammonia will decompose quicker, and those plates that are very rapid—extremely rapid—will not keep as long as those that are less rapid. Then, you have mentioned the separators as being the cause of the deterioration. I mean to say that it is in a great many instances the cause of producing a fog, which appears first at the edges of the plates and then extends to the interior. It has been our aim to find out the most suitable material for separating plates, and so far we have not found anything better than separators; but there is a great difference as to the materials they are made of. It has been our aim to get a straw board from which they are made, which is as free from chemicals as possible. I think we can get a better article now, which warrants us in saying that this deterioration of the plate by the separator will be overcome,

I would say this, that formerly we had to use our plate immediately after it was prepared. I understood the President to say that he wanted to know if he was carry his plates to California to use them in the course of six years afterward, whether he could depend upon his plate. I would say for myself that I think that is rather asking too much, and it goes rather beyond my experience, as I do not know of any instance where the plates have been kept for six years. I can say for myself that I have kept plates for a year, and they were as good as when first made; but there is a difference in the plates when first made, and in the preparation as to their sensitiveness. As I stated in the first place, if you have an excess of ammonia, you will not be able to keep the plates as long as if the contrary was the case.

Now, as to the second part, the deterioration of the negatives. I claim that when a dry plate negative is properly treated and washed, that it is not more liable to change than a plate of the old style—a collodion negative. If you were to see how careless a great many work; you would understand why their negatives did not remain unchanged. I have wondered many times when visiting galleries in some places how insufficiently a good many photographers are prepared. For instance, the room is very small—so small that they can hardly turn around in it—and they have no supply of water, no selection of dishes, and it is a wonderful thing to me how they can work in such places at all. I believe the dry plate negative should be washed as carefully as a print. It should be well fixed in fresh hypo. The fixing bath should not be used too long, and the plate should be left in it for a sufficient time, and afterward should be well washed in a current of water.

MR. INGLIS—*Ladies and Gentlemen:* Now, since this discussion has been opened, I have a little more to say. I said all I could before, but now I have a little more to say. It has been stated by the last speaker that extraordinary sensitiveness is a cause of the deterioration of the dry plate. It is not so. [Applause.] When I was in Scotland, when I thought the proof of the pudding is the eating of it, I found that the contrary is the case, and I can prove that is not so. I doubt very much whether it is in the order the plate was made with regard to the ammonia, as was also stated. I will not say that it is not so, but I doubt it very much. I will tell you my experience, as far as that part of it goes. When first I began making plates I was very much like the photographers that Mr. Cramer has spoken about, having a small place and not very many conveniences around, and therefore did not finish the thing as it ought to be. I do remember well plates that were exceedingly good in their way, or in every requisite to make a good plate for a negative, in a very short time were worthless. They are full of spots and many other miserable things that no photographer likes to see any more than I do. This was not brought about by any different way in the making of the emulsion from what it is made to-day. The plates I make to-day will last very well, and I have no doubt that the President might take them from here to California, and come back six years afterward, and make good work out of them. He can try it if he likes. [Applause.]

So much for what it does not do; as to what it does do, I am not going to tell you, inasmuch as I do not know myself; but this I do know, that this thing does not deteriorate the plates—the way that they are made. It is a singular business, a very peculiar business, this photography, as to the old wet process in which I began, and it is not less singular and strange in the dry process in which I am engaged now. Everything seems to go by opposites. I was astonished last winter when I saw in the English Year Book an article telling us how to obtain a soft negative, and how to obtain strong ones. Now, this was just as opposite as the north is from the south, the way by which I would obtain these two things. Now, though I have said a little in opposition to what Mr. Cramer has said, I will not say that what he has said is not correct, followed on a certain line. What I do say, I repeat with all the emphasis that I can, that it is not because of the extra sensitiveness of the plate that it deteriorates, for the fact is that I have made plates of the very highest order of sensitiveness which have not deteriorated, but the very opposite; they have become even more sensitive than otherwise. That is the proof I have to bring forward that extra sensitiveness don't deteriorate. The plates made under different conditions are more sensitive than others, and might deteriorate; but, then, there has been something very necessary for the completion of that plate to make it a first-class one at the beginning.

Then in regard to the negatives. This morning I heard a gentleman at my side say that he was afraid that he would have to give them up altogether, inasmuch as when he came to print duplicates from these negatives he could never get a good plate again. Now, this, I say, is not the fault of the plate. The fault may be entirely from another cause. The proof I have for that is from a friend with whom I am well acquainted, who has been using dry plates for three years. Not more than two months ago I had a conversation with him on this same subject, and I asked him if he did not find that the negatives, after going back with them a year or more, that they were harder or yellow, or something of this kind, because this is the sort of communication that we dry-plate men hear a good deal of. We have letters from our customers asking the reason of this, that and the other thing, and it would require us to know an awful sight to answer all these questions; and this one especially has been put to me in letters. He said that at least three or four years ago he made some plates, and that he used them lately, and that they were just as good as the day he made them. Now, if this is so in this case, why should it not be so in a hundred other cases, provided they stand the same test?

This gentleman this morning said that a half hour's washing was not sufficient, and he was going to quit having anything to do with them. Well, this is a free country, and he can do as he likes. This friend that I spoke of left them in the water over night, and he washed them, frequently changing the water during the day; put them in a fresh lot of water at night. The next morning he took them out and rinsed them, and set them aside; and that is the way that he washed his plates. I think that labor that he gave to them has certainly rewarded him many fold over the one who wants to have them finished in a half hour, or five minutes—some come down to five minutes.

Now, it is not necessary that the negatives should be kept in running water, but, as Mr. Cramer has said, plates should be washed just about in the same manner that prints are. The film being so very different from the collodion film of the wet process—the film of gelatine, being more like a sponge, requires to be soaked out. We can not squeeze it out as we could the paper prints, or squeeze water out of a rag. If we could do that we could squeeze it out at once as we would squeeze the water out of a sponge, and then the thing would be clean from all that would deteriorate it afterward. Since we cannot do that, we can only do that which will be proper—that is, to soak it out. If this is done, I think the negatives will keep just as long as the collodion negatives. Now, I think that I have said about all that I have to say. If some one will tell me something that I do not know, or if they tell me something which I think is contrary to the case in hand, I will speak again.

Mr. CLIFFORD—I wish to state a few facts in regard to my experience in keeping dry plates. Within the last month or six weeks I have had experience with plates which were made four years ago last February. I ordered made for me a dozen 14 x 18 plates for interior pictures. Part of those plates I have kept until last week, Thursday. I took two of those plates in a holder and went away sixty miles, trusting those two plates for my picture, and I got a good picture. When I came back with these plates, after exposing them and developing them, I think that they were equally as good as they were the first day that they were used, four years ago last February. The negative which I made first from those plates is as good as the day it was made. Perhaps some of you saw it in New York City when the convention was held there.

Now, I have had three trials of plates from that same lot—one two years ago and last June. The first to which I refer was an interior picture of a church, and the last one was a week ago last Thursday. The plates were equally as fine and free from any pin-holes as could be desired.

Another maker of dry plates furnished me some three years ago last October, which I also used three weeks ago this day to take a street procession. I had two of them. I had three left in my box. I got those on purpose and I thought I would see what the result of my experiment would be. I wanted to watch the quality for myself that I might know the fact, and the plates I exposed on this street view, which was a very important one, a Masonic celebration in a town, were exposed but a very few seconds; indeed, I had but a few seconds to do it. So I trusted to those plates, and they came out very beautiful, brilliant, soft, clear, and entirely perfect all over their surface, as good as I have ever worked. These are the facts to which I attest.

Mr. Page, of Connecticut—I would like to say a few words. I have listened with pleasure to the remarks of Messrs. Cramer and Inglis. I have never had the pleasure of seeing Mr. Inglis before, but what has been said after all does not touch the point as to what is the cause and what is the cure. What I would like to know is the cause and the cure of the deterioration of the plates. Now, I have used dry plates a little over a couple of years, and, looking over my negatives a short time since, I could not find one out of the lot that was made two years ago that is perfect. I have a good dark room and good accessories. I could not find a plate but what is more or less discolored. Those that I make at the present time are subject to a great deal of washing. I calculate to wash a plate after they are fixed about half an hour. I left one in the dish one night and let the water run on it all night, to see how much better it would get than the others. The consequence was the next morning that the glass was there and that was all. [Laughter]. Now I use great care in my work, I believe. I make good pictures, have a fair trade, and keep up my business, while others speak of the depression in business. My business is good. This has been the case for the last two or three months. I do not know what the reason is exactly, but such is the fact nevertheless. I go to work at the time at my level best, and if there is anything I can get to make the thing better, I get it without regard so much to the price. I want good work, and I want to have it so that I am proud of it when it comes out of my place of business. I feel interested in it. I love it. I love photographic work. I expect to make my living out of it. I have so far, and I expect to continue doing so, and I want to get the very best results I possibly can. I believe that the people of the community where I live do appreciate it in some manner. While, of course, there are a good many people that do not know one kind of picture from another, there are others who do, and I believe that we can educate the people up to it, so that they will appreciate the difference and stand by us in our prices for our work. If we do that and if all do it there will be better times for us, but I want to get out of this difficulty that is now before us—the difficulty of plates discoloring. I have only used two kinds of plates with the results just spoken of. They discolor. They do not work as well, and if there is any way out of this difficulty I would like to have somebody explain it.

Mr. Clifford—I would like to ask one question. What kind of water was used? I find that there is some difference in the water.

Mr. Page—That is one good point. The water that I used is hard.

Mr. Clifford—I have no trouble with any of my plates.

Mr. Atwater—I want to say that I have seen a great many different men develop dry plates, and wash them, and I have discovered that a great many take a great deal of pains with them, and then they show the negative to the customer before they finish washing, and in consequence the plate becomes greasy, and it is almost impossible to wash the plate afterward. We find those men who are losing their plates, a great many of them are losing them, because they keep the plate out of the water too long.

Mr. Bellsmith, of Chicago—I want to say that my experience has been just the opposite of the last speaker, in this respect; I never show a negative to a customer under any consideration. I don't believe in it. Immediately after removing the negative from the hypo, and placing it in a solution of alum, I wash it under the faucet, place it in my washing box, washing-tank, where it remains until I am ready to go home, when it is taken and rinsed again and placed in the rack.

My experience with dry plates has been almost the same with every brand of plate. I have used some six brands of plates within the last six years. In reference to deterioration, I find that they grow more intense and become slower printers. And, although you have a negative that is weak, thin and a poor printer when you put it away, if you take that negative out six months or a year afterward, it will make a very brilliant print; while, if you have a negative that is very strong, cold and crisp, when it makes a very beautiful print for its first order, when you come to print from the same plate a year or two afterward you will find that the negative will print very hard, unsatisfactory, and will give you a very hard, unsatisfactory result. I have found this has been the same on all the plates I have used.

The *President*—It is very strange I have had the opposite experience myself.

Mr. BOUTWELL—I would like to ask a question of Mr. Cramer about his eliminator; I would like to have him give me the formula for the eliminator.

Mr. FLOYD, Lock Haven—I find that I have some of my plates discolored that were not thoroughly fixed apparently when they were taken from the hypo. They look as though they were fixed, but in two days they commence turning a brown color. I think that we people who have trouble with dry plates, if we would fix them thoroughly, we would not have the trouble. They come out of the hypo bath apparently fixed, but they are not; if I let them stay in until I am pretty sure, say half an hour, I have no trouble. I find plates that were made a few years ago, washed under the tap, make as good prints as they did two years ago. I think the silver is not all fixed out; that is the trouble.

Mr. CRAMER—In answer to the question propounded by Mr. Boutwell, in the remarks made by him, and also the remarks made by Mr. Inglis, I wish to add a few remarks to what has been already said. When I said that a very sensitive plate was more apt to deteriorate than a less sensitive plate, Mr. Inglis did not seem to concede what I said, but he says himself that the plate gains in rapidity by age. I think that this is the very first step toward deterioration of the plate, and the plate gets finally so sensitive, it cannot be developed in any light; even the ruby light will fog the plate. I have found that the more sensitive the plates are, the more sensitive they are to all other influences, either by long keeping, or by the separators or by anything else; a slow plate may not be injured by chemicals contained in the paper which makes the separator, while very sensitive plates will show the marks very soon. That is one point I wish to add in that respect. Then, as far as the keeping quality is concerned, that is, keeping them for six years, I do not wish to vouch for anything I have not tried. I cannot be responsible, as I have not had an experience for six years, and I do not want to anticipate that. After six years, I may be able to say that plates will keep that length of time. At this time, I cannot say.

Now, about the keeping of the negatives. I could tell the probable cause of that very soon. I have seen some parties make nice negatives from the same plate, resembling the wet collodium plate, which was liked so much, with regard to color and quick printing quality, while another man makes from the very same plate a yellow negative, nasty looking; so that now I would say it must be altogether in the treatment. I think that the first reason may be in the developer. A developer which is old, or has decomposed pyro, will produce a yellow negative, when a fresh solution of pyro will make a gray negative. Furthermore, there should be sufficient care taken in the washing of the plate before putting it into the fixing bath; it will carry a certain amount of alkali into the fixing bath, be it either ammonia or carbonate of potassium or carbonate of soda; and if the hypo bath contains a good deal of alkali, it has a tendency to color the negative yellow; the fixing bath will also produce a yellow color, if it is used too long; if it is saturated with bromide of silver, which shows by its slow action in fixing. It has been mentioned before, the plate should remain in the hypo sufficiently long to secure perfect elimination of all the soluble salts of silver which will still remain in the film, after a plate has been apparently fixed, of which you can convince yourself. If you take such a plate out into the light, and show it to your customers as one of the gentlemen has spoken of, you will find that the plate will turn yellow very quickly. It ought to be left in the hypo bath for a sufficient length of time, and should not be exposed to the light until it has had some washing. I think that if all these provisions are carefully observed, there will be no more complaint about yellow negatives. Also, the addition of alum to the hypo bath will produce gray negatives easier than the plain fixing bath; alum has the tendency of producing a gray color and not a yellow color.

A gentleman was asking me about the eliminator and the formula that I published. I would say I published that only to be used in cases of emergency when there was no supply of water. It was a diluted solution, commonly called the eau de javelle, made of the chloride of lime and potassium carbonate. I said at that time, and still say now, that it is only in cases of emergency, only in a season when a sufficient supply of water cannot be had. I do not recommend anybody to make a general practice of it. We insist upon a thorough washing of the plate in all cases. That is all I have to say.

Mr. BACKRACH—Mr. President, I desire to ask Mr. Cramer in what manner the plates were developed, whether by the pyro or the ferrous oxalate. I have certain reasons for asking.

Mr. CLIFFORD—I will answer the gentleman. One of the brands of the plates I made a test of I used the pyro developer and ammonia; the second one I referred to was made four years ago last February, and was developed with the ferrous oxalate; the last one was the pyro potash—three different developers, a modification of the three, which I made. I intended to have brought the prints from each of these negatives with me, but I could not get them all printed and finished in time, so I left them behind.

Mr. BACKRACH—I desire to state that I was the party that Mr. Inglis spoke of this morning.

Mr. INGLIS—I would state that I would like to make one correction which Mr. Backrach has brought to my memory, a mistake that I made when I was on the platform. I said that he said he would not use the plates; it was the return to the oxalate developer that I should have said. I am glad to make the correction.

Mr. BACKRACH—All I state is this, that we have plenty of water in Baltimore, and we wash our plates in a stream of fast-running water from half an hour to an hour. It is not only our experience, but that of Mr. Busey and others, that as to duplicate orders of plates made two or three years since, every one of those plates made exhibited deterioration—more than one would conceive of—those treated with ferrous oxalate and those that were developed with pyro. All our ferrous oxalate plates were as good as the day they were made. So there must be some reason for it. It seems strange that when a plate is not washed long enough it should change, while the other would not.

Now, I would like some information on that subject. I stated to Mr. Inglis if the thing was not remedied we would have to return to the ferrous oxalate development, although I did not like to do so. Since speaking to Mr. Inglis I have been speaking to Mr. Butelier, sitting right beside me, who has had a different experience, and who will speak for himself. He has spoken to me about it. I think it is a very good plan. I do not mean to discourage the use of the pyro. We want to keep using it. It is easier to work, and everything else that is desirable.

Mr. GRANGER, Syracuse—Mr. President, there seems to be some discrepancy in the result of observations made on the deterioration of dry plates. Some have soft water and others have hard water.

Now, why should we not ask the manufacturers of plates, who know what they are doing, whether the plates are to be washed in hard water or in soft water; whether that would make any difference in the use of the plates after they are thoroughly washed? Mr. Clifford states that his plates are as good as they were four years ago. Other gentlemen here state that plates made one or two years ago deteriorate very much. Now, the question occurs to me that Mr. Clifford is in a country where they use soft water, Other persons may use water which is called hard water. Now, is it a fact that hard or soft water has a different effect upon the plates? I think it is a hard question to determine.

Mr. CRAMER—I don't think that hard water —what is generally termed hard water—which contains lime, can have any bad effect upon the plate, because we wash our emulsion in water that contains lime; it is rather hard. I don't think that has anything to do with it. I did not understand Mr. Backrach; did his negatives turn more transparent by age?

Mr. BACKRACH—Very thin.

Mr. CRAMER—I think that the cause is the imperfect elimination of the hypo. If you do not wash out the hypo, you will observe that the negative fades rapidly and becomes very thin.

Mr. BACKRACH—How would it be with negatives developed with ferrous oxalate; you do not have the same effect; can you give a reason for that? If one is not fixed enough the other certainly would be.

Mr. CRAMER—I am not positive about it, but it may be explained that the negative developed by pyro may need more washing.

Mr. BACKRACH—I think Mr. Beidel here can give some points.

Mr. INGLIS—Once more, Mr. President, before this gentleman begins, and I would say that I am now again in opposition to Mr. Cramer, but I am rising to state facts. Mr. Cramer says if you take a negative out of the soda and hang it up the next day you will find it quite thin. Mr. Pomeroy, of Rochester, took a negative, one made by myself, a plate made by myself, the other plate made by Forbes; he did not wash them; he only tested the two plates to see the result of the two different makes. In the evening, when he was showing them to Mr. Forbes, who was in, he was perfectly astonished; they were so intense you could not see through the shadows scarcely. [Applause.]

Mr. BEIDEL—I have been using plates for two years, and they are as good as they were two years ago. I saw such a plate in Washington taken from the hypo. I soak my plates always from six to eight hours in well water—hard water. I don't know whether it is as hard as some water that is used—lime water. I don't use anything but the alum soda bath for fixing. That seems to be the opposite of what has been stated. In regard to the washing, I washed in hard water.

Mr. INGLIS—What developer do you use?

Mr. BEIDEL—I use the pyro-sulphite developer.

Mr. HUNTER, of Massachusetts—I would like to inquire if these gentlemen in washing their plates lay them with the film up in a flat dish, and simply let them soak in the water?

Mr. BEIDEL—I place the negative with the film up, as the gentleman spoke of in the morning. I never find the plate with the film all gone, as has been stated.

Mr. HUNTER—The effect of laying them flat in the water, allowing the water to run down upon it, is, it has a better chance to get washed than if it was standing on its end.

Mr. BEIDEL—I must say, of course, that I change the water on these plates two or three times during the evening, and once in the morning, before washing it. I would like to inquire of the gentleman from Massachusetts whether he washed his plates lying down or standing on end.

Mr. HUNTER—Lying down flat.

Mr. DICKSON, Michigan—I am not the only man from Michigan. I find that Michigan is very well represented here, and I am very proud of that fact. I will only take up a few minutes in what I have to say. I have had three and a half years' experience in the use of gelatine plates. I can say nothing about the deterioration of the plates, for I know nothing about it; but my experience of the deterioration in the negative has been extensive, and I can give that experience as to that. I recently bought out a gallery, and had occasion to look over the negatives, and among those negatives I found probably one-half that were entirely useless. They had turned yellow, and were full of spots, many of them; some plates or negatives that I brought with me, that I had made two and a half or three years ago, were as good, and would make as good a print as the first prints I ever made from them. Why it is I do not know. I will state, however, that these negatives that I brought with me, they were made so long ago, and were developed with an oxalate developer—I have since adopted the pyro developer—and I will further state that I have always made it a practice to thoroughly fix my negatives, and also to thoroughly wash them. I usually place them under the running stream of water. This was hard water that I have been in the habit of using. I now use soft water. Recently I adopted the plan alluded to by several of the members here. I place my negatives in a tray, and change my water occasionally, and oftentimes I leave them in the water during the night—the water running on them—and in the morning I rinse them out and then hang them up to dry, and I have no trouble with my negatives whatever.

Mr. MANCHESTER—I would ask Mr. Backrach a question—what developer he uses.

Mr. BACKRACH—I use the pyro.

Mr. MANCHESTER—I was going to suggest, in reference to the matter of the deterioration of plates, that there must certainly be two causes, because we find two opposite results. The gentleman speaking from the same row of seats on which I am sitting spoke of the negatives being intensified, and in my practice I have found just the opposite stated by others, that the negatives in deteriorating become very thin. I think that perhaps it might be from this cause. The two opposite effects might be from the use of ammonia in the one case, and perhaps soda in the other. I would like to hear suggestions in regard to it. I might say that we know that in intensifying the negatives, when we apply a solution of dilute ammonia to the negatives, that a film is changed, and seems to become greasy, or has a greasy appearance, and we can hardly wash the hypo out of the bath. It seems to resist all the efforts made for washing it out.

Mr. BELLSMITH—I would state I do not use the ammonia developer, but I use the pyro and the two sodas, as well as the acetic acid. What I stated with regard to the intensity of the negatives is certainly so, for I have had occasion many times to notice it, particularly so in one case of a child—a picture that was taken two years ago—one of those extremely cranky children you sometimes meet with, out of which it is very difficult to get anything at all. The negative was washed and set aside, rather believing and expecting to have the child come in again in a few days. The child was taken sick and died, and the order was given and the negative was finished and retouched; and I would say here, there was no redeveloper or intensifier used upon that negative. The negative was stored away, and about ten months after that a duplicate order came in. We found the quality of the print had increased very much indeed. The improvement of the negative seemed to be considerable. It was considerably more intense, seemed to be greatly improved, was bolder and stronger in every way. I say that I used the formula given by Mr. Cramer. As to intensification, we never ought to use it, and we very seldom need to. I think that we ought to make our negatives in such a way that they would not require intensification. When we do not do that we want something to depend upon. My experience has been that mercury is a very bad thing to use on gelatine plates in any form. It certainly will make them flat, and they will grow yellow with age and grow more intense, and become very bad printers in a very short time. But of the two evils, the two kinds of working developers we have at present, I like free mercury, and pour the solution over the negative as it is whitened, and then a dilute solution of sulphite of soda. After being thoroughly washed the plates will keep a great deal longer than when the mercury is used according to the formula published by Mr. Cramer and others.

Mr. POTTER—I have used dry plates for a little over four years, and used oxalate three years, and pyro also. Judging from my experience, I think where negatives grow yellow and intensify, that they are not properly fixed and properly washed; but where they grow thin they are properly fixed, but not properly washed. [Applause.]

I believe our Baltimore friend will make a mistake if he goes to the oxalate—not that I am down on oxalate, because I have some fine negatives in oxalate, kept properly. This is the point I make. In using large negatives I suppose it is the experience of every one who uses them that a great many of the plates are very much spotted in the center. You will notice that they are fixed all around but in that one spot in the center. And as to the hypo—about the rapidity of fixing. The plates will vary a great deal, because the same plates will fix more quickly, and in another case fix very slow in the center. My experience has been that it applies to the oxalate as well as to the pyro; that when slow fixing goes on usually with the large negative, you take it out and show it, because you are trying to get the best result you can; you take it out and you lift the plate up, and the milkiness disappears; you take it out and go to washing. Now, that plate is not properly fixed in that spot. Now, I have plates all perfect except in that spot. That is the reason that some of our negatives are slow in fixing and are discolored. Negatives three or four years old, not a particle of discoloration anywhere else except right in that spot. [Applause.]

Now, I wash the negative all the same so that I know it is not the hypo. I do not varnish the negatives. The moment you get a bad print out in the center you get hypo in your print. That is the way you can find out your trouble.

Now, this discoloration has not spread, and I feel very positive where it is the case the fixing has not been properly done, has not gone to a proper extent, and there is a combination of hyposulphite of silver. Your discoloration in the course of time, probably in the mechanical combination of the gelatine, causes this discoloration; but if the negative is properly fixed, properly washed, they are just as firm as the wet one.

Now, then, about the washing. The reason is that I wash my plates, taking a swab of cotton as soon as they come out of the hypo—I use hypo and alum together—as soon as they come out I put them under the tap, turn on the full force of the water, take this swab of cotton, wash them all over, and thus get rid of all sediment from the hypo bath on the negative, and they will wash in half the time when they are freed from sediment.

Now, then, I use hard water. I leave the negatives of a smaller size wash for fifteen minutes under the tap. If I have many negatives I have two or three taps, and I set them around so the water will drop on them. As soon as I think it is washed enough I put in another negative, and so on until they are all washed. I give them all a washing under the tap always for fifteen minutes, making allowances. Now, before I put the negatives away I take this same swab of cotton and take off whatever sediment that may come from the water. Hard water will leave somewhat of a sediment on the negative. By doing this, you will have a much brighter and cleaner print.

Mr. INGLIS—Just one word more, and I will not inflict myself upon you for a very long time. Now, ladies and gentlemen, I think the nail has been struck upon the head and we have found the cause, but they don't tell us the cure. Now, this is the cause of those yellow stains without doubt. I will give you an instance. Two years ago, in Philadelphia, Mr. Gilbert asked me up-stairs to look at some negatives, and he wanted to know what was the cause of those yellow stains. He said that different explanations had been given by dry plate makers. He said that he had asked the opinion of every one. I instantly said it was an unfixed negative. Well, said he, that is the opinion I have myself. Mr. Carbutt had told him something else. Perhaps Mr. Carbutt can tell us about it afterward, but that was the cause of it. Some large plates were sent down to us last winter, and they were sent back with the comment that they were good for nothing because he could not fix them in the night; there were spots like the spot described exactly. He says I cannot pay you for these, I have lost such and such a number, and you can have them back. I wrote him back what to do, and I never heard any further word from him. He did not want to pay for those he had thrown away through his ignorance. I want to tell you what to do, and how he succeeded. You will notice, if you will take a plate out of the fixing box, if you will put your finger upon it, it is as tough as leather; it is as hard as anything. If you will take it and put it under the tap for a few minutes it relaxes out, the pores open, and then you can put it back in the fixing box and it will fix out as before. If you will do this you will succeed every time with the most obstinate. That has been my case. You will cure that trouble if you do as I suggest. These yellow films that come from age are, as it has just been decided here, from an unfixed negative. Then, in regard to the lime, I always prefer to put my plates—and let me tell you I do not photograph to any extent, I merely test plates; but in testing them I prefer putting them into a lime before putting them into the soda. I always had a clearer plate by this means. I also keep the soda clean. Then I would recommend, as this gentleman over here has said, to always set the plate on the edge and not to lay it flat. It will always drop down if you lay them flat.

Now, then lastly, but not the least in importance—our friend here looks as if he was combating with me, and now I must have it out. You know, when the truth, or rather when a thing is put with a show of truth, it is the most deceiving thing imaginable. What Mr. Cramer said was true—in part. [Laughter.] I said that my plate at least became more sensitive with age. I did not mean that he tried to make you believe that they go on—unfortunately—he said, and become good for nothing. I have plates made over twelve months ago; they were excellent when they were made, and they are more excellent to-day, and they are lovely in every way. Now, I have also made plates more than twelve months ago and they were not worth that (snapping fingers); it shows the contrariness of emulsions. Why it is I don't know anything at all about it. But that is the case. Let me impress upon you that the extra sensitiveness, if it is a good plate, will not deteriorate any more than if it is a slow plate. Furthermore, I will produce the best picture seen on this earth with extra sensitiveness, the more so than with one less sensitive. I can give you a reason for it, but that is not a point for discussion just now.

Mr. BEIDEL—I want to say just one word in relation to what Mr. Inglis has said. I always rub the surface of my plate, before it is put in the water, with a camel's hair brush—before I wash it.

Mr. CARBUTT, of Philadelphia—*Ladies and gentlemen:* I agree with the remarks that have been made both by Mr. Inglis and Mr. Cramer, in a measure, There is, as you will all find by experience in working, a difference in dry plates. In regard to what causes certain changes, Mr. Clifford, I think, has stated it very exactly. What brings it about? The one you are most complaining about, the yellow negative. First, I would like to touch upon the keeping of plates. Perhaps I have had the longest experience in making plates of any man in America. There came into my hands a month ago a sample of plates made three years ago. I was glad to get them. I had not myself any plates made as long ago as that. They were tested, and found to be in a perfect conditon. They were put up with interleaves, without any blemish whatever on them. With regard to the staining caused by separators, there are two causes, and one is partially due to the dry plate makers themselves, I think in this way, that frequently the plates are picked out when they are not thoroughly dry—you may say bone dry—yet, to all appearances, they are dried. The chemical impurity that has been in the material forming the separators, the plate has absorbed it, and has caused this staining. Now, I have taken some pains to investigate the material out of which the separators are made. I have had a machine for making my own separators, so as to get the stock from a source where I would know whether there were any impurities. I obtained the information I wanted from the party from whom I got the straw board that has been used in its general manufacture. Many are under the impression that the hypo-sulphite of soda gets into the cleansing mill. I am assured by those who make the material that such is not the case. I am asured that hypo-sulphite of soda is not used in the making of straw board. Lime is used in cutting out the material, destroying the fiber of the straw; the material is afterward washed with the washing machine, and the hypo does not enter into the process. They do not find it necessary to use it. But recently I have found out that both Mr. Cramer and myself have been investigating in the same direction as to the source of supply for separators, and the manufacturers have assured me, and I have no doubt that Mr. Cramer has the same information, as to the material out of which the straw board is made, if he wants it for use. Up to the present time I have found that the best means of separating my plates were separators. Paper, when it is used, as it is also used, if it be put between the surfaces of the plates, there is a slight concavity in all glass; unless great pressure is brought to bear there will be no touching of the film, but it is where plates are carried for a long distance and by the friction of travel they will rub a little on the surface, and in this way injure, undoubtedly, the plate. Where the films are kept slightly separated by material that is not in any way injurious, this will not take place. I have been investigating this subject very closely with regard to keeping plates. It is an important matter to have the information as to the plates, as to whether they can be carried for a great distance.

There is one matter that I am glad to speak about. At the time Captain Howgate was fitting out the expedition to go north, I was called upon to supply the plates for the unfortunate photographer who lost his life. The plates did not go any further than St. Johns, and were sent back again. Then the plates were stored in an outhouse, I was told, in Washington, during the winter. They were brought back to Philadelphia, and he and myself, so that there might be no mistake about the examination of the plates, we opened all the packages and took plates from here and there among them, and tested them as to their goodness or not, whether they should be sent out again, with an increased supply added to them. In some cases the packages taken out were wet. The moisture had been absorbed, and when the plates were separated the interleaves were found to be wet; where the plates were not interleaved on the surface, they were found to be perfect in all respects. I do not think it is taking too much credit to myself, but I think Mr. Clifford will permit me to say that the plates that he first referred to were the plates that I made for him.

Mr. CLIFFORD—That is the case.

Mr. CARBUTT—I was only getting at this point, as to what care is taken in keeping the plates. As to that, we shall have to depend upon the plate-makers of this country. They are doing their level best to get the very best material that can be procured to both make the plates and to put them up properly. I know that during the last week I put some up, with the very best separators, made out of the very best cardboard obtained from Collins & Co., who supply me. I believe that they have the purest that can be had; it is so considered by the trade for photographic purposes. Where a plate is simply marked on the margin and where the change does not travel any further into the middle of the plate, that, I believe, is caused by pressure. I believe the more sensitive the plate the more sensitive it is to that pressure. When the separators are made of this material, we, unfortunately, have to depend upon those who make them.

The manufacturers at first did not know what we wanted. We now insist on knowing what impurities are used in cardboard, and whether it contains any chlorine. If there is any chlorine it will cause a discoloration over the film. I have not observed it on any of the plates that have passed through my hands in which the separator has been made out of the same material, and I don't think, from what I know of my brother competitors, that they would use for the sake of saving the cost of it, which is so infinitesimally small; it is not simply the cost—that is a small matter—but we have not been able to get the right thing yet.

Now, as to the keeping of the negatives. Some of you remember the negatives taken at Chicago, among the first of the gelatine negatives taken five years ago. They were made at the time of the Grant procession or parade at Philadelphia. I can assure you those negatives are as fresh and as good to-day as when I first finished them, and developed them with pyro and ammonia, and reasonably washed. But photographers, to get out of this difficulty of having their negatives deteriorate, must give a little thought to the material they are using. Gelatine has so much body compared with collodion, and it holds tenaciously any salts in its interstices; it takes a long time to wash it out; so that if there will be any cause of any decomposition, like the putting in any unwashed plates into the hypo, or putting alum into the hypo, decomposition commences, and when decomposition commences in the film it is hard to get at it. I agree that the plates should be thoroughly washed, putting in the alum when I think it is needed, especially in the summer time. I put it in as a matter of precaution in the summer time, as it is advisable to do it. I would further put into the solution of alum the plate; the solution of alum and ammonia, because I think it is the safest; it will not deteriorate like chlorine solutions. Put it into the fresh solutions of alum, after a thorough washing, and then a good rinsing, and then put it away to dry, and then have a little more thought in using the plates. If this were the case there would be less talk about the deterioration of the negatives; also keeping the plates; keep them in a dry place, free from ammonia or any gas that would injure them.

Mr. Inglis—I want to call attention to the remarks of Mr. Carbutt. When he commenced, he said that perhaps the fault might lay in the manufacturer taking them out a little too soon, before they were bone dry. That seemed to me the trouble, and that was the thought of a good many who were sitting around me. Now, if that is the cause of the deterioration, how shall we reconcile the remarks which have been made, which are very opposite from each other. He speaks of the plates which were left for six months, which were all perfect, though in a damp, wet place.

Mr. Carbutt, of Philadelphia—Mr. President and gentlemen, I had reference then to this mark which came from the separator, where pressure is also brought to bear, as well as the impurity, as well as the separator itself.

Mr. Inglis—From the dampness?

Mr. Carbutt—What caused it to pass into the plate was the exposure; not from any impurity in the separator or any imperfection in the making of the plate itself. For instance, when we have been rushed with orders, how would it be? We have not waited until the plates were thoroughly dry, but have taken them out when they looked to be dry on the surface. If we had taken a knife and scraped that film, we would find it soft underneath; if there was any chlorine matter in the separator, it would undoubtedly be absorbed from the separator into the plate, penetrating into it.

Mr. Inglis—Exactly; would it not be the same thing when the dampness got into the plate first—would it not be caused by this dampness?

Mr. Carbutt—I think the cause that I have said was from the pressure in the center of the plate, when there was a piece of the paper in the plates; when there is a substance the thirty-second of an inch between there that bears heavily upon the plate.

Mr. Inglis—It is all very well; it is not the dampness; it is the separator.

Mr. Carbutt—It is the dampness in the separator.

Mr. Inglis—Therefore it is the separator and not the dampness.

Mr. Carbutt—It may be because the separator has been dampened.

Mr. Brown—I would like to ask Mr. Carbutt a question. If I understand him, the idea that he suggests is, that we dip our plates in the alum baths before fixing, and then also again in another alum after fixing.

Mr. Carbutt—Yes, sir.

Mr. Carbutt—I would like to suggest here one thing, in regard to the fixing of negatives, gelatine negatives; I would advise the use of dipping baths—two fixing baths, one to be used, and then the other; the last one to be used following the first one, so as to insure its fixing, for in the changing and discolorization of the plates I am certain a great deal of it is acquired in using the fixing baths too much. Therefore, if you would have a second bath, and after you thought it was fixed in the first one, if you just put it into another, while developing another plate, you would add surety to your plate being fixed. Give it a good, thorough washing, and you will have no trouble in regard to fixing the plate washing.

Mr. STEBBINS then called for the regular order of business.

The *President*—The next business in order will be the reading of the paper by Mr. Ryder. (The paper was deferred until Wednesday morning.)

The *President*—I will mention that I have a prize, from E. & H. T. Anthony & Co., for the best collection of photographs made upon the Stanley dry plate. They wish me to appoint a committee of judges, so I will appoint Mr. Potter, of Indianapolis, and Mr. Stuart, of Hartford.

Mr. POTTER—We have chosen Mr. W. A. Armstrong, of Milwaukee, as the third.

Mr. CRAMER—With regard to this resolution, I wish to state that after the last meeting in Cincinnati the association refused to act in this affair of prizes being awarded to dry plate makers. I don't see why there should be any exception made; I don't see why the association has anything to do with it.

The *President*—Is there an objection made to it? I am about to appoint a committee on the prize offered by E. & H. T. Anthony & Co. for the best productions on the Stanley dry plate.

Mr. CRAMER—As I understand, you are appointing a committee from the association. The association refused to do the same thing last year. I don't think the association has anything to do with it. I rise to a point of order in regard to that matter.

A motion was then made that the order of business be taken up at ten o'clock to-morrow morning.

The *President* — The committee that I nominated for officers for the ensuing year, Mr. Ryder, Mr. Cramer, Mr. Foulke and Mr. Clark, of Indianapolis, if they will please come to the front before I put the motion to adjourn, I would be much obliged to them.

I have here an elegant gold medal, presented by Mr. Gentilé, the editor of *The Eye*, for the best display of photographs by any photographer at this exhibition. I will appoint Dr. Elliott, Mr. J. Traill Taylor, Mrs. Clark Fitzgibbons, if she will act, and Dr. E. L. Wilson, of Philadelphia.

Mr. J. TRAILL TAYLOR—I decline to serve on that committee. I would rather not give my reasons for it.

Mr. E. L. WILSON, of Philadelphia—I think that the editors ought to be excused, and I really decline for want of time. I shall be glad if you would take somebody in my place.

Mr. BELLSMITH suggested that the award be made by a majority of the votes of the members of the association.

On motion, Thursday morning was set apart for taking the ballot.

Mr. CRAMER urged his objection to the appointing of a committee from the association in regard to the prize given by E. & H. T. Anthony & Co.

Mr. CRAMER made a motion that ten medals be given by the association at the next exhibition for prizes, and offered to subscribe five hundred dollars for that purpose.

Mr. BACKRACH then moved that the association adjourn until 10 o'clock the next morning.

Adjourned.

BUFFALO, N. Y., July 15, 1885.

SECOND DAY.

The convention was called to order at 10 A. M.

The first business in order was the reading of the report of the Committee on Nominations.

Mr. Ryder, of Cleveland, read the report, and it was recommitted to him, to be given to the association to-morrow morning.

The *President*—The next thing in order will be miscellaneous business.

Then followed a reconsideration of the motion to postpone the visit to Niagara until the next day, and it was decided to go to-day, the original time appointed on the programme.

The *President* then called on Mr. Ryder to read his paper, "How to See" (see former page).

The paper of Mr. Ryder was received with great applause.

The *President*—The next subject will be "The Best Method of Lighting the Dark Room." Discussion. Any member having anything to say on this subject, we will be glad to hear from him. I think that this will be the last thing we can attend to this morning, as we ought to have a short session, in order to give us time to get lunch before we start for the Falls.

Mr. INGLIS—I think that this subject of lighting the dark room is one of vital importance to photographers. The discussion we had yesterday afternoon, I am very glad to say, pleased me very much. I think that this subject needs the same discussion, as it is an important one. I find in many instances that men complain about the light used in the dark room—the ruby light—and say, some of them, they can scarcely see the plates they are developing. This is on account of the fear they have that the light will fog the plate. I think that this fear is wholly unnecessary. As for myself, I have a great amount of light in my dark room, the only care taken to be far enough away, so that it will not have any actinic power upon the plate. I don't know whether it is material—ruby glass or paper, or green or yellow be used—I think the result or the effect amounts to the same thing, provided the plate is not too near the actinic power of it. Use plenty of light in the dark room, but stay very far away from its actinic power.

Mr. CLIFFORD—Having visited your dark room when I was last in your city, I think that the President should be invited to describe the lighting of his dark room.

The *President*—I have one window 20 by 24, and six sheets of orange tissue paper form the ruby light, and I have no difficulty with fogging. That is about the way I light my dark room. The gas is outside and the key inside, so I have no difficulty in keeping the room cool, and I have it ventilated all around with about fifteen or eighteen little four-inch square holes in the lower part of the same, and above them little elbows, and in that way I prevent the penetration of light, and I get ventilation without light. In that respect my dark room is two degrees cooler than any other room in the house in the summer time. I first tried one sheet of orange tissue paper, and exposed the plate to it, and found it to fog; then I put on two, and the fog was less, and so on until I put on six sheets, and then I inclosed those six sheets between two glasses to prevent any spattering of the developer, and I found no trouble with fog at all. I hold my plate right up to it, close, put on the gas full, if I want to examine it, and I have no trouble. That is all I have to say about the particular way of lighting my dark room.

Mr. HUNTER—I would like to inquire how you light your gas?

The *President*—The turn-key is on the inside. I light the gas in the morning, and when I want to use it all I have to do is to turn it up.

Mr. HUNTER—The idea is a good one, of having a battery, and merely by pulling the chain, it will light up the gas; it can be done in this way.

The *President*—That will do very well. There was one thing I forgot to mention; my gas is on the outside of the dark room and faces the skylight; oftentimes there is a screen in front, and sometimes I have the daylight and the gaslight mixed. I have a sheet-iron box around the whole thing, so I have only the direct effect of the gaslight without anything else.

Mr. KENNY—My dark room opens into the operating room. I have considerable trouble, and I would like to ask if six or eight sheets of paper would be sufficient protection from the light coming from the operating room.

The *President*—No, sir; I tried that first; it was too irregular on account of the screens being moved about during some portions of the day, and being obliged, late and early, to use the dark room, I just thought I would have a tin box go around it, and only turn on the light that I knew the strength of, and it was not too strong.

Mr. KENNY—The question was if it was the white light, not the gaslight—whether it would be a protection from the white light.

The *President*—From the full open skylight?

Mr. KENNY—Yes.

The *President*—No; I don't think so.

Mr. KENNY—How would it do to have the window out-doors?

The *President*—I have tried that, and I believe the strong sunlight would be very severe; you would have to use a sheet or two more of paper.

Mr BLUNT, of Virginia—Would not heavier paper answer for the same purpose, if not better, say such as is used for envelopes. I use a thick paper on the order of the envelope paper, and it is a ruby paper.

The *President*—I should think that would be very good. I believe it is the best thing for everybody to try for themselves; try different sheets of paper. The way I did was, to take a sheet of opaque paper and make several openings in it, put it on the plate and hold it to the light, and then I developed and I found those openings were printed right on the plate. As I said before, I then put on another sheet, and tried it again, and then sheet after sheet, until there was no impression, or not impression enough to amount to anything.

Mr. BROWN—I have been sufficiently interested in this subject to make inquiries about it. I have found that using the ruby light has had an injurious effect upon my eyes, and the thought has occurred to me whether or not we were not always confused upon the subject by what we find printed upon our boxes. It says "Open by ruby light," or something of that kind. What I wish to have decided is, are we safe to try anything but ruby light. Of course, those of some experience in the use of dry plates, using them for a longer time, have found it out; but there are a great many members here who have not felt confidence in doing anything else for fear of getting off the track. We all know that if we change from ruby light to a different kind of light in a dark room, it changes our vision to a certain extent and our ability of judging of the intensity of the negative.

The *President*—I believe in following the directions on the box.

Mr. BROWN—The question is, whether we are safe in using anything but the ruby light. I should like to ask Mr. Cramer to reply to that question.

Mr. CRAMER—Mr. President, I would say these remarks upon ruby light, and this direction which is put upon our boxes, was put there at the time of the first introduction of the dry plate, and when there was nothing else to use but the ruby light; but any light will do which is equally non-actinic, and safe enough as far as this point is concerned. There is no color perfectly non-actinic; even ruby light will affect the plate if it is exposed to it long enough. We have tried that in many instances, and found even our weak lanterns, which have a very weak light and which are covered with ruby glass, orange glass will affect the plates when they are exposed to the lanterns for from two to five minutes. I would recommend the use of the ruby glass and the orange glass combined, and then adapt it to the circumstances. This may answer the purpose if the light faces in with the operating room; it might not if the sun shines there. So you will have to use your own judgment. The idea is that the light will be sufficient, so as to allow you to watch the progress of the developing, but not so strong as to affect or fog the plate. I find a very good way, provided the light is modified to that extent, to take the plate which is in the developer, after the developer is poured on; of course, you have to bring it near the light to see what you are doing, and then to raise it up above the level of the light, and move the dish and bring it back to the light and watch it, taking care not to hold it to the light all the time. I have seen a green light in use by Dr. Garrison, and he seemed to be greatly in favor of the green light, but I have heard no more of it. It seems to me it has no advantages. Perhaps Mr. Gentilé can tell us more about that. The best mediums for light, so far as I know, are the ruby glass, combined with the orange color, and as to the papers, a very light paper known as envelope paper answers very well, and is of a very equal texture. I have combined this with yellow. You can make the light answer the purpose. I have seen dark rooms so dark you could not see anything; you could not catch hold of anything; hardly any light at all, and entirely too small and insufficient; you would almost say that they were entirely without light; you would not be safe in opening a box of paste. So I think you will use your own judgment in this matter.

Mr. BELLSMITH—There is one branch of this subject which seems to be lost sight of, and that is the effect upon the eyesight of the light used in the dark room. It is a prevailing opinion among a good many of those who have thought upon this subject that the ruby light was extremely injurious to the eyesight, while the orange and green is not so much so. My experience has been that the ruby light has proven quite injurious to my eyesight. I have been using ruby light for three or four years. When I first commenced to use it I had a remarkably fine eyesight, but my eyes are certainly failing. I have talked with a great many on this subject, and they are of the same opinion. Talking with Mr. Seed, a few months ago, in St. Louis, he said that that had been exactly his experience, and that his eyesight has grown so bad that he had to use the strongest glasses, and he advocated the use of orange and green. He says that since he has adopted it he has felt an agreeable improvement in regard to his eyesight. This is an important matter to all those who work in the dark room. I believe, from the little experience I have had, that the color which I have recently adopted is a great improvement over the orange alone or the ruby light.

Mr. GENTILÉ—I would state that I have

used the orange and green for three years now, and I have found it a very good light. I have tried almost every brand of plate under it, and I do not think it fogs them. In my room I can see to read or to write or to do anything. Of course, I do not always take the plates very close to the light. I think it will be found to act well in effect, and I will say it seems a much more pleasant light than the ruby light.

Mr. CRAMER—Only two glasses.

Mr. GENTILÉ—The orange and green. My light comes from the operating room, not direct.

The *President*—It is not primary, but secondary.

Mr. GENTILÉ—Yes.

Mr. CRAMER—We have some letters to read before we adjourn.

The *President*—We have some foreign letters here with reference to the foreign exhibits, but we will read those letters some other time, as our time is so very short.

Mr. CLIFFORD—It occurs to me that when we go to Niagara Falls we ought to have a place for meeting or we will not be able to find each other.

The *President*—I think we will all have to go to Goat Island.

Mr. ARMSTRONG—I will read the report of the award of the prizes in the Stanley Dry Plate matter.

The committee appointed to award the prizes for the best display of photographs made on the Stanley Dry Plate gives the first prize, for pictures larger than 14 x 17, consisting of a climax portrait camera 20 x 22, with all the late improvements, to H. McMichael, of Buffalo, New York. The second prize, for cabinet size, a 5 x 8 Fairy camera, to J. M. Brainard, Rome, New York.

Signed, W. H. POTTER,
W. A. ARMSTRONG.

Adjourned to meet at 10 A. M., Thursday, July 16, 1885.

◆

[*From Detroit Free Press.*]

THE CAMERA.

BY LUKE SHARP.

THE amateur photographers of this city have a room where they meet every now and then to swap lies and photographs. They call their room "The Camera," as that is said by the High School graduate to be the Latin for room. It is the custom for each of the members to give his experience when called on by the Chairman, and after the set speeches there is a general discussion on matters pertaining to amateur photography. The great interest of the last meeting was the report of Mr. Smith on the use of the tourist's film negative. Mr. Smith has always been the first one to adopt the latest inventions, and there is consequently some jealousy among the other members of "The Camera" regarding him.

Mr. Smith had with him a tourist's camera, to which was attached the new-fangled arrangement he proposed to enlighten the lodge on.

THE LATEST THING IN PHOTOGRAPHY.

"Gentlemen," said Mr. Smith, "the greatest trouble the photographic tourist has to contend with is the carrying of dry plates. These are clumsy, heavy and fragile. He cannot carry with him more than four or five plate holders, and this gives him the chance of taking only eight or ten pictures a day. There is then the trouble of changing them at night when a person is fagged out by a day's tramp, and the constant worry of protecting them from the light until he reaches a place where he can develop them. Here is an English invention that does away with all this. The attachment is expensive. The one fixed to my camera cost $25, but it soon pays for itself. Where a plate would cost $1.25 the paper film will be only thirty cents. The holder contains two spools on which is wound paper enough for taking thirty-six pictures 5 x 8 inches. There is no changing of plates. You can take thirty-six pictures without changing your plate holder."

WHAT THE FILM NEGATIVE IS.

"On this stretch of paper there is a gelatine sensitive film. You take a picture, then turn this key four times and another 5 x 8 surface is exposed ready for taking another picture. The $25 arrangement holds this roll of sensitized paper, and when a picture is turned on it marks the correct length automatically, so that there is no trouble in cutting off the correct length of the paper. It is possible to cut off one length and leave the rest of the roll undeveloped, ready for the rest of the tour. I will now give you a practical demonstration of how the paper film is developed, and how the gelatine is taken off and prepared for printing. I have taken a trip up to Mackinac Island, and have thirty-five pictures on this spool which I shall develop."

A MANIPULATORY MISTAKE.

The lights were turned out in the room and the red star of the ruby lantern glowed on the table. The amateurs crowded around to see the development of the new kind of negative. "You see," said Smith, with something of unnecessary patronage in his tone, "I use the ordinary developing mixture. I cut this first five-by-eight sheet and place it in the bottom of the tray and pour the developer over it thus. You will soon notice the coming of the picture."

They peered into the tray as Smith rocked it gently so that the fluid flowed evenly from one side to the other over the submerged sheet. No picture appeared. Smith began to get anxious.

"Under-timed, I guess," said the Chairman. "Put in some of the intensifier."

Smith did so, but without result.

"I say, Smith," said Jones, who had been examining the spools and paper belt, "which side is the sensitive side?"

"Why, any fool can tell that by the glaze!"

"Well, I'll bet there was one fool who couldn't. Look here, Smith, you have been photographing on the wrong side of the paper!"

There was a general laugh at this. It struck every one (except Smith) as funny that a man should roam all over Mackinac focusing and shooting off his camera at fine scenery when he had blank paper behind the lens to catch the picture.

BROWN'S RETIREMENT FROM PHOTOGRAPHY.

When the lights were lit, young Brown came forward to explain his resignation from the society. He had an oblong canvas-covered camera holder with him, and he placed it on the table. He sighed and said: "I have here," tapping the canvas box, "a very good camera. It has been used but once, has a revolving back and all the modern improvements. I will sell it for $5, complete as it is in the box. Who wants it?"

"I'll take it," shouted half a dozen voices at once.

"Well," said Brown, "I'll let you toss up for it, the winner to pay me the $5."

With this he slowly unbuckled the strap, took off the lid and *poured* out the camera. He actually poured it out. There were about a hundred different pieces. It was a wreck.

"Save the pieces," said some one.

"I have done so," said Brown sadly, "although most of the ground glass is gone and I have but four bits of the lens. I mention all the drawbacks so that the purchaser may not growl afterward."

"That's good of you," said one of the fellows who took the $5 offer.

Brown acknowledged the remark and then proceeded to tell

HOW IT HAPPENED.

"You perhaps have heard of the Ice Carnival at Montreal, last winter?"

"We have," shouted every one, with rather too boisterous and unanimous a yell.

"Thank you," said Brown, bowing to different parts of the room. "I like to have a unanimous affirmative like that. Photographers are too apt to deal with negatives. I'm glad you remember the carnival. I have nothing to say about it. I didn't go there. But out in Oakland County we got up a toboggan slide that almost equaled anything in Montreal. I was going to take an instantaneous view of the sleighs going down the hill. Some Oakland County people have queer ideas about jokes. While I had the black focus cloth over my head, they started down the hill with a big bob-sleigh. They *say* they shouted. Perhaps they did. That's neither here nor there. It certainly wasn't *there* to my knowledge. They came down like a whirlwind, and the camera and I went up like a whirlwind. It was too blamed instantaneous for me. More drop shutter about it than I liked. When I got down, I quit the focusing and took to cussing the foe." Here Brown stopped and looked expectantly around the room. There was nothing but blank silence. As this began to be painful, Jones raised his hands and faintly clapped them together.

"That was kind of you, Jones. I shan't forget it," said Brown, gratefully. "You will, I am sure, be pleased to learn that the party on the bob-sleigh were so hilarious over their successful bit of humor that they neglected the little necessary details of their occupation and ran into a rail fence and were spilled over the greater part of the adjoining ten-acre field."

There was a genuine burst of applause at this, and Brown scooped the camera remains into his canvas box again.

"Will the gentleman who offered $5 now step forward?" he asked. "Come up to the captain's office and settle."

No one came, so Brown still has his camera, but is doing no photographing with it this season.

THE WET VS. THE DRY PROCESS.

"Some one has handed me a note," said the chairman, "to the effect that Robinson has abandoned the dry plates for wet plates. I am surprised to hear that. It seems a backward step. Would you mind telling your reasons, Mr. Robinson?"

Mr. R. blushed as he took the stand, and then smiled a little dubiously.

"I think it was a forward step," he began.

"Doubtless," said the chairman, rather perplexed. "But the general opinion seems to be in favor of the dry process."

"Well, Mr. Chairman, it is like this: There is a grain of truth in that note, but the tone of it is misleading. I went out the other morning to photograph the Put-in-Bay steamer, the Alaska. She is a fine boat, as you know, and makes a fine subject for an instantaneous view. I got my distance, and had the camera in the prow of the small boat. I had two plates and a single plate holder. I got what I think would have been a fine view of the steamer coming toward me. I next intended to take her picture after she had passed, but I forgot about the swells from her wheels, and when the rowboat suddenly raised to them I took that unlucky step forward, and myself and the plates—camera and all—took headers into the river. I may add that having tried both kinds I prefer the dry process."

"That's all right in photography," said Brown, "but I think in real every-day life the wet process has its advantages; so, boys, before every place closes up, come, let us adjourn and try the wet process at my expense."

The meeting adjourned accordingly.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—F. W. S. writes us about a print with some peculiar spot in it, but fails to send the print.

Q.—R. W. C. writes: "I have a printing bath that was turned a golden yellow color by putting in carbonate of magnesia for the purpose of taking out the acid, and now I want to get the yellow out. Please let me know how to do it, and still keep the bath good. No amount of sunning will do it."

A.—If you have made the bath alkaline and then sunned it, and the color does not disappear, you had better make a new one. If you have not tried alkaline sunning, do so; we think it will help you.

Q.—J. W. W. writes: "There is too much contrast in my negatives between light and shadow. Some of them become a jelly by the time they are developed, and they are veiled with a green fog. Tell me what to do."

A.—Too great contrast is caused by too much pyro in the developer. Under-exposure and forced development will give green fog. Give more time and use about one grain of pyro to the ounce of developer. To prevent films softening, use cold solutions in warm weather, made with ice water; also an alum bath.

Q.—J. W. W. again writes: "Please send me a good recipe for intensifying dry-plate negatives."

A.—Several of these have appeared in late numbers of the BULLETIN. A good one is to immerse the plate in a ten-grain solution of bichloride of mercury until white; then wash and flow with, water ten ounces, liquid ammonia, one dram. This will change the color to an intense dark shade.

Q.—A. W. W. writes: "I read in the BULLETIN of a method to print from a draft or drawing, similar to printing from a negative, by chemically-prepared paper, which made a blue image after development. Can you inform me how I can get the materials?"

A.—The method you mean is evidently the ferro-prussiate process. The paper can be bought already prepared of our publishers. It consists of a mixture of ammonia-citrate of iron and red prussiate of potash. It is developed by simply washing in water.

Q.—H. B. W. writes: "What is the legal rate of postage on photographs? Some postmasters charge one cent per ounce; some one cent for two ounces, and others one cent for four ounces or fractions thereof. Please answer through BULLETIN."

A.—The legal rate for postage on photographs in the United States is one cent per ounce or fraction thereof.

Q.—J. C. P. writes: "Seeing how kindly you answer the questions put you by other amateurs in distress, I am emboldened to seek a little information. 1. I inclose print. Why do the buildings at the end of the track appear so indistinct? 2. I tone with the formula in

February 14 number of BULLETIN, but my prints have this burnt, dry appearance. 3. In fuming my ready-sensitized paper for ten or fifteen minutes it turns brown. Is this detrimental? 4th and last. Will you say what the causes of the faults in my negative and print are?"

A.—The print is a good one, and the cause of the indistinctness in the distance is, that in such pictures all the distant objects are over-exposed. These objects can be brought out by masking the rest of the negative during printing by holding over it a card with a hole in it, and keep it moving until the desired detail is obtained. Don't allow the card to stand still, or the print will have a sharp outline of the hole in the card. In regard to color of the print, we think the tone a very agreeable one; if you want a blacker tone, fume longer, say half an hour. If you mean that your paper becomes a buff-like color, it is all right; but if dark, we think it is not good. Your negative is evidently over-exposed in the distance, and too intense in those parts; by printing as we say, you will overcome this difficulty.

Views Caught with the Drop Shutter.

WE are pleased to note the organization of the "Watertown Camera Club," among the amateurs at Watertown, N. Y. The club expects to get some good negatives of St. Lawrence scenery and the Thousand Islands during the summer. We wish them every success, and shall be glad to hear from them at any time.

Mr. G. H. RIPLEY, the well-known member of the Society of Amateur Photographers, has recently bought the dry plate manufactory of Mr. Geo. G. Rockwood, and proposes to carry it on to produce dry plates of a high grade. Special attention will be paid to the needs of amateurs, and great care is to be taken in the selection and cutting of the glass. Mr. Ripley's experience as an amateur should serve him well in his new enterprise. See his announcement under Special Notices in our advertising columns.

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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

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ANTHONY'S
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Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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THE EXHIBIT OF PHOTOGRAPHIC APPARATUS AT BUFFALO.

THE exhibit of apparatus and photographic accessories at Buffalo, afforded an unusually good opportunity to study the development of this exceedingly interesting phase of the art. The amount of ingenuity displayed by the various inventors was truly wonderful, while the excellence of finish of the work of the manufacturers deserves the highest praise. When we think of the miserably clumsy cameras and stands of but a very few years ago, and then look upon the highly finished work of the same kind at the Buffalo exhibition, we are compelled to say that the appliances for producing art work have themselves become truly artistic. And by artistic appliances we do not mean to say they are simply good to look upon, but rather that the spirit of delicate design is followed while aiming at the greatest utility.

We spent many hours for several days rambling among the various exhibits, and will try to give our readers some of our impressions of the various novelties we saw, taking up the different sections in about the order they stood in the hall of the State Arsenal.

Immediatly to the right of the main aisle was the handsome exhibit of our publishers, E. & H. T. ANTHONY & Co. Here was found every conceivable piece of apparatus needed by the photographer, either professional or amateur. From the largest portrait camera 20 x 24 (which was given as a prize to Mr. H. McMichael for pictures on the Stanley plates) down to the smallest sizes. Novel cameras of every size, from 18 x 22 to 3¼ x 4¼, and fairy cameras from 8 x 10 down, formed a very imposing array of fine, and at the same time thoroughly useful apparatus. Quite a number of the cameras were fitted with the Eastman Roller Holder for paper negatives. These cameras had a corresponding line of stands and tripods fitted to studio and field service. Among the tripods may be mentioned an ingenious device to prevent the detaching of the legs from the top, when the upper part is pressed in the hand, which consists of a brass spring that entirely prevents the movement of the two upper members of the leg toward each other when pressed, while a simple pressure of the spring itself readily detaches them from the tripod top.

A handsome case in the center of the exhibit presented a very attractive appearance, both from its contents and the very tasteful banners with which it was surmounted. In this case was found a complete line of Dallmeyer lenses; and it was a highly interesting sight, since such a collection has not been seen before for some time, owing to the demand for these lenses. Full sets of Platyscope and E. A. lenses were also exhibited here, and were much asked about. A neat collection of chemicals, with the E. A. brand upon them, presented an attractive appearance, and the sulphite of soda and pyrogallic acid appeared to us to leave nothing to be desired as to their good qualities.

In addition to the above, destined more especially for studio work, we noted many novelties, designed to meet the wants of the amateur photographer.

Among these was the improved Detective camera, with its nicely finished box, its rapid shutter, adjustable from the outside, without the necessity of opening the front of the box; and the improved plate-holders, with hard rubber slides.

Another novelty, which was not seen before the exhibition, was Barker's Revolving-Back camera. This is a development of his well-known Novel camera, and consists in having a revolving back so arranged that the rotation is accomplished by moving a light wooden hoop in the segment of a circle, where it can be fastened by means of a small screw. This is certainly the lightest revolving-back camera we have seen.

The Men of the Wheel have called forth many ingenious devices for their pleasure and convenience; and as some of them like to practice photography, cameras and apparatus are made to suit their particular needs. With this end in view, our publishers have devised a very neat and compact apparatus, called the Bicycle Camera, which is well made, light, and leaves nothing to be desired in regard to its fitness for the tourist. It carries a $3\frac{1}{4}$ x $4\frac{1}{4}$ plate, and with its lens and holders in a neat leather case, can readily be carried upon the two-wheeled steed. A small brass clamp, with a ball joint, allows of its being readily attached to the bicycle. With all these conveniences, the whole outfit is remarkably cheap.

For the amateur who would rather walk, we find two forms of 5 x 8 cameras that are the latest advances in apparatus suited to his needs. These are what are called the O. N. A. outfits. One of these, called Style A, consists of a 5 x 8 camera with folding bed, with the well-known flat hooks of the Fairy camera, and shuts up into a very compact space. The other form is called style B, and is the same as A, with the addition of a rising front and a swing back. Both forms are fitted with lenses, and are sold at a very low figure for the neat and well finished work that is in them. We heard many words of praise for these outfits, and saw some very good work done with them.

Yet another novelty in cameras in this exhibit is what is called the Novelette. This is practically a 4 x 5 Novel camera, without swing back, and is made up in the same light style as the little Bijou camera manufactured by our publishers. It is very light and compact, and has the ingenious revolving bellows arrangement characteristic of the original Novel cameras. The front of the camera rises and falls upon the usual brass rods, and the bed folds up, being kept rigid when down by the flat hooks adapted from the Fairy camera. An ingenious cam attachment does away with the usual screw for clamping the body of the camera in focussing, and proves very convenient. The back of the camera is fitted to carry the very light Detective holders, and the whole affair is very compact, light and convenient.

The Fairy Tripod, which we noticed in these columns some time ago, received much attention at Buffalo. Its unusually compact size (15 inches long) and great lightness (less than two pounds), together with its uncommon rigidity, must attract the attention of all who see it.

As we have noted from time to time in these pages, the day of the paper negative is at hand, and in accordance with this advance the manufacturers are devsing new pieces of apparatus to meet the requirements of the new development. In accordance with this, we note a new film holder, devised by Mr. E. B. Barker, and exhibited in the section under notice. This is practically the plate-carrier of a plate-holder arranged to hold paper for negatives. It is a wooden plate, around which is fitted a light metal frame that catches the paper for the negative; and the whole slides into the ordinary plate-holder in place of the usual plates and septum. It is very ingenious, and allows of paper negatives being taken with the ordinary dry plate holders.

There were quite a number of minor improvements in this fine exhibit, but we have only space to mention one other novelty, and that is the new crayon paper. This is an adaptation of the rapid gelatino-bromide printing paper to the use of crayon drawing. The rapid paper, as usually made, is too smooth and entirely unsuited to the work of the crayon artist. To overcome this difficulty, Mr. T. C. Roche has invented a modification of the paper, by which he obtains what is called a "tooth" surface. This allows of the finest crayon work, and is quite an advance in this direction.

The interest displayed by the crowd always found around the section under notice, showed that the effort of our publishers to do their best for the exhibition was highly appreciated.

Much of the success of this exhibit is due to Mr. George Ayres, whose indefatigable energy and genial good humor made all interested in the various pieces of apparatus feel that he was pleased to answer their questions.

Mr. E. B. Barker was also present to see his many friends and acquaintances, and as many of the novelties exhibited were from his designs, he was in demand to explain their merits.

We must not forget to mention that we are indebted to Mr. S. Crampton and Mr. George Donaldson (who had charge of the BULLETIN headquarters) for many kind attentions during our stay at Buffalo.

The second section on the right of the main aisle was occupied by the *Blair Tourograph Company.* Here was seen an extensive exhibit of their well-known extension-back cameras. The largest of these was a combination camera, which is virtually two boxes in one. One of the combinations allows of using a plate 14 x 17, and, by attaching the extension, it can be made to take plates 22 x 27. This camera is fitted to use for copying, and has a flexible slide to its large plate-holder. We are a little afraid of these flexible slides, as the opportunities for leaking light through the numerous strips forming the slide appear to us a little dangerous; but, perhaps, this fear is unfounded. A camera called the Champion, made upon the same general principles, was shown, to carry 8 x 10 and 14 x 17 plates.

In these cameras the ground glass is so attached to the back of the bellows that the plate-holder can be slipped behind it without its being removed. Since the boxes are made square, the plate-holder is reversible.

Quite an ingenious novelty in this

exhibit is the Lucidograph, which is practically a camera, whose carrying case is utilized to form part of the box itself. It has an extension bed in front, which folds into the box; also a simple double swing and rising front. The whole affair folds up very completely. The exhibit of this firm was in charge of the Blair Bros., and everything connected with it was arranged with neatness and good taste.

Immediatety opposite, on the left of the aisle, was the exhibit of *David Tucker & Co.*, the well-known photographic merchants, of Buffalo. These gentlemen showed a very large collection of apparatus, consisting of cameras, stands, tripods, &c. Among the novelties we noticed a very ingenious Revolver camera, which at first sight appeared to be a veritable bull-dog revolver; but closer inspection revealed the fact that it was a camera for instantaneous shots with plates about three-fourths of an inch square. It was very beautifully finished in nickel-plate, and presented a very handsome appearance. It was certainly the best thing of the kind we have seen for such small plates.

In this exhibit was a very ingenious drying and fuming box, the invention of Mr. Hale, of Rochester, who has patented it. We were quite interested in this, and shall say something further about it in the future.

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THE BULLETIN does good missionary work wherever it goes and its publishers and editors have our warmest wishes for its prosperity.

Very sincerely yours,
R. F. HEMENWAY,
Sec. Lowell Society Amateur Photographers.

THE BULLETIN came duly to hand; it contains many valuable hints for every photographer and amateur. I met with a failure in developing; to-day I found in your BULLETIN a paper, which explained the whole affair.

OTTO HEINS.

THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA—1886.

IN addition to the officers mentioned in our last issue, Messrs. G. Cramer, of St. Louis, and D. R. Clark, of Indianapolis, were elected to serve on the Executive Committee.

These gentlemen, together with the *President*, *Secretary* and *Treasurer*, take office next year. Our attention has been called to the fact that, in our notice of the Buffalo meeting, we spoke of Mr. Landy as the late President. This is a mistake, as, according to the Constitution and By-Laws of the Association, he holds office until January 1st next. We hope Mr. Landy will forgive us for being in such a hurry to decapitate him.

One other matter escaped our notice when speaking of the Buffalo meeting—this was the mention of the prize medal received by Mr. J. F. Ryder, of Cleveland, for the best exhibit of pictures at the convention. This prize was a handsome gold medal presented by the "*Photographic Eye*," and awarded by the vote of the members of the association. On it was inscribed the very appropriate words, *Qui meruit palmum ferat.* And the receiver of it well deserves the palm.

We had not forgotten this well-merited honor to Mr. Ryder, but intended to speak of it when we came to notice the pictures in another article. As our attention has been called to this apparent omission in our notice, we make this statement at the present time.

I ENCLOSE $2 for the BULLETIN, which comes to hand as beautiful as a bride. I thought it unusually good last year, but this year it promises to excel itself. I do not quite see how you can afford so much for the money.

Yours truly,
T. W. BANKS,
Arkansas.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK, AS REORGANIZED.

At the time the above society was incorporated, recently, a new constitution and by-laws were adopted, which materially widened its scope. The business is carried on under the management of a Board of Directors, who also elect new members. Standing committees, composed of members of the Board, attend in detail to the different branches of the work, and the latter will, in consequence, be carried on very efficiently.

Two new classes of membership have been created—an associated membership, which was mainly intended to accommodate the younger class of resident amateurs who could not afford to pay as much as others, but who would like to enjoy the privileges of the society. The initiation fee of this class is $5; annual dues, $10. And a corresponding membership, which is open to both amateurs and professionals either in this or foreign countries. The by-laws specify in regard to this class that they shall be entitled to the use of the society's dark room and library when in New York City for a brief period. They shall be privileged to send communications to the society or to any officer thereof, on any subject relating to photography, and to receive prompt answers; to exchange specimens of work with other members, and to receive copies of all official reports and papers which may from time to time be published. They shall be required to register their name and address in a "register book" at the society's room, each time it is visited. It will be noticed that the society undertakes to be of considerable service to these members, and the low charge of $5 per year, which is the sum required, will doubtless be repaid many times over by the reliable and useful information which they are likely to receive. Only those who reside fifty miles or more from New York are eligible to this class of membership.

We understand there is to be an "experience meeting" held August 12; and at the fall meeting, on September 8, a demonstration on paper negatives, by the Eastman Dry Plate and Film Company, will be given.

Such a pushing and growing society as this has proved itself to be, is certainly worthy of having a large corresponding membership, and we commend the managers for providing such an agreeable connecting link with all professional photographers. They should willingly support an organization which offers so freely to give information of a practical kind, and we have no doubt they will when they fully understand that it will be to their advantage.

PHOTOGRAPHIC PORTRAITS *versus* CAMERA PICTURES.

By J. L. Hurd, Providence, R. I.

[Read before the Photographers' Association of America.]

Saxe has said:

> "A little dullness may afford relief
> On some occasions—if it's very brief."

And I suppose your committee had this in mind when they did me the honor to ask that I should read a paper before this convention. These hasty thoughts may be neither entertaining nor instructive, but I shall ask you for your ears for a few minutes while I talk about the pictures that we make.

We have become so familiar with the results of photography as perhaps to have lost in some degree a sense of its importance, and may fail to realize the value of the discovery of the principles which underlie it. I thought to-day, in looking at the magnificent display of work under this roof, how short was the step back to the time when all such pictures were unknown; forty-six years will cover the period from the first crude daguerreotype to the present hour. Even the first experiments of which we have any knowledge, looking in this direction, are embraced within the present century. It was in 1802, as you remember, that the Journal of the Royal Institution of London published an account of the attempts of Wedgwood and Sir Humphrey Davy to fix the image which they had succeeded in obtaining on paper; but failing to do so, the subject seems to have been dropped for some years.

In 1839 we find Daguerre with the the problem solved and his discovery patented. The French government promptly negotiated for the secret, and Daguerre retired to a chateau nine miles from Paris on a pension of $2,000 a year. It was about this time that he sold the right to England for a large sum, and the process of making pictures with chemicals and light was now fairly launched upon the world. I wish the first daguerreotype ever made could be placed in the exhibition hall here, that we might fully realize the point from whence we started. We need not trace the new-born art through the days when the silvered plate received the impression, nor later when a variation of the principle brought in the collodion process, followed by the gelatine plate of to-day; step by step it has held its way, year by year the manifold improvements of working have been going on; the small number of the disciples of Daguerre have swelled to a countless host (not to mention the amateurs) in the last forty years, and the air is darkened with photographic productions. I am tracing its progress solely in relation to portraiture, without reference to its numerous and important applications in other directions. Think of it for a moment; the desire which is as old as the race, to behold the lineaments of those we love in their absence, or when that absence comes which shuts them forever from our sight, has had but meagre gratification until within the memory of those now living. True, the painters in each generation have left upon canvas with more or less fidelity a few portraits; there have been miniatures on ivory and other substances, and silhouettes, and in passing let me say that the silhouette has a very pathetic significance, the almost universal presence in the humble homes of the English-speaking race of this the crudest form of portraiture known to civilized man, voiced the cry of the multitude for a semblance of their friends.

We designate the period previous to the Christian era by the abbreviation B. C.; pardon me if I seem to parody this by the suggestion that B. D. should stand for before Daguerre. By this little retrospective glance we are reminded that before Daguerre a very important factor in the humanizing of mankind was almost wholly wanting. The sun picture not only placed portraiture within the means of the masses, but gave results which before had been but dimly hinted at by the best artists. I allude to the accuracy and delicacy of expression. However much we may admire the canvases of our best portrait painters, as works of art they never successully rival the productions of our best photographers in depicting the emotions conveyed by the face which has been their subject. Nor is it possible, for the brush paints clumsily in comparison with sunlight. When the boy whistled in school he excused himself by saying that it whistled itself. Photographic portraits produce themselves in one sense, as he who steps before a mirror is duplicated with the utmost exactness as he is at the moment. This fact has led to a great misapprehenson on the part of the public. It is thought that photography is simply chemical and mechanical; that it goes with a crank like a grindstone; that any man who owns a camera and possesses the secret of dark-room manipulations is a photographic artist.

A landscape painter said to me: "Photographers have the same instruments and use the same chemicals, do they not? What, then, prevents one man from making as good pictures as another? I see that they don't, but I fail to understand why." I replied: "Your knights of the brush all use the same canvas and brushes and paints; why does one man's work have greater value than another's?" "That answers me," he said; "but it never occurred to me before that the photographer had much to do with it." This prejudice is very deeply rooted in the minds of the community. If you make them a better picture than they have had before, they consider it a happy hit; that the light was unusually favorable or the gods smiled on the effort. Some very astute people have come to consider that brilliancy of chemical effect, fineness of retouching and high burnish are fairly within the skill and denote the excellence of the photographer. The great essentials of portraiture—the study of the subject, the lighting, posing, the subordination of subordinate things, and general harmony of the whole—are matters that not one in a thousand reflects for a moment belong at all to the production of photographs; and yet there are men now listening to me who give this value to their sittings with little reward, I am afraid, either of appreciation or money,

It is told of a man who had his portrait painted by an artist of distinction that, being no judge of art himself, he bethought him of a friend—a house painter—who surely ought to know, if anybody. The critic scanned the portrait and finally said: "So, you paid that man $150, did you? I assure you there isn't 20 shillings' worth of paint on the whole canvas." This is the whole thing in a nutshell: are we selling the stock that enters into our productions, or is it our skill that we are offering the public? In the craze of cheap picture making that is upon us it would seem to be the former. I do not propose to discuss the matter of prices except in such wise as is inseparable from what I am trying to say. It seems to me that photography is in a transition state; we have achieved much—how much the visitor of this exhibition can judge. But there are causes operating to degrade our art "that make the judicious grieve." Perhaps I can best illustrate this by stating what seems to me to be the difference between camera pictures and photographic portraits. Camera pictures have a high popularity because they are cheap. They are made generally by men who have a level head for business, men who have organized a factory, if I may be allowed to so express it, for the production of photographs. The requirements of the public are carefully kept in mind. Brilliant chemical effects are not hard to attain. Retouching, the chief use of which is as generally employed, to make people's pictures look less like them, is done (or overdone), with that free and easy defiance of the modeling of the face which makes the heads of old and young suggest nothing so much as a billiard ball; and thereby the public is pleased and flattered, the picture maker wins the good opinion of old ladies of both sexes, and the shekels flow into the treasury. An establishment of this kind, well organized for business, and giving their sitters a set of stereotyped positions, can easily handle from thirty to one-hundred people in a day.

To make photographic portraits, the conditions are essentially different. The operator should be an artist—a man of culture and refinement, acquainted with art principles, and all the resources of photography. He should have that subtle feeling for portrait effects which every man is not born with. Every sitter should be a study and the sitting accomplished in the most leisurely way. If your appointment is with a stranger, seek to establish a little acquaintance, for until the restraint that exists between strangers in the first moments of intercourse has disappeared the subject will not be at his best for a picture. Suggestions as to attire should be freely offered if anything is worn that will mar the effect. There are with most people many little things that mark their individuality besides the lines of the face; the postures they assume, the way of holding the head etc. All these things should be noted before you attempt to secure a pose. A half dozen plates are none too many to use, and two hours none too much time to devote to your client. You are thus enabled to employ various lightings, try different views of the face and different attitudes, taking your subject in repose and action, and thus assure yourself that you are getting the most favorable result possible. Compare the proofs from your plates, and if you find that anything more to your satisfaction can be obtained, secure another sitting. It is only when you are fully satisfied yourself that the sitter should be consulted, and only proofs shown from such plates as you are willing to work from. The further operation of retouching the negative and printing from it must be carefully supervised by yourself, or all your pains and skill may come to naught. The soft, beautiful effects that a well-handled gelatine plate will afford leave but little necessary working of the negative in a majority of cases; and that, I need not say, is the work for an artist. No cause, it seems to me, contributes so much to make abortions of photographs as the retouching we usually see. A distinguished portrait painter lately said that the photographs of to-day were worthless as aids to painting portraits because of retouching.

It may be said that no more than three or four sittings could be made in a day if such methods as I have suggested were adopted. That would be quite enough. Make a charge for your services that would be made by any professional man in good repute for the same outlay of time. The ability and training required to make one competent for such work is not a whit less than that required for any professional pursuit. We pay a lawyer $50 or $500, according to the importance of the case, for an opinion. We know that we are paying for skill, for special attainments. The public will pay for the exercise of great talents and skill in the landscape painter and the portrait painter. The trouble is, photography has never been recognized as an art. I am afraid we must admit that it has not risen to that dignity of art, as it is generally practiced, that might be wished, nor do I believe that every man engaged in it could practice it, in the manner described here, successfully, or that every hamlet in the land offers a field for such work. But I believe there are a dozen cities between the two great seas that wash us on either side where an artist in photography would win a position in a few months. It seems to me that it must be some such departure as this that will rescue photography from the low estate in which it is hastening, financially and otherwise, and I venture the prophecy that in the future, perhaps not far distant either, there will be photographic portraits hanging upon the walls of affluent homes, where taste and culture preside, which will not be spoken of as "only a photograph," but will be prized for their art value as well as for their qualities as likenesses, and the artist honored and paid for his genius and skill.

SCIENTIFIC DEVELOPMENT.

By Col. Stuart Wortley, London, England.

[Read by J. Traill Taylor, Esq., before the Photographers' Association of America.]

My friend, Mr. J. Traill Taylor, having asked me to write a short article to be read at the Photographic Convention, I gladly do so; but I have nothing that is new, and perhaps nothing that may be interesting to say. It will be remembered how great was the variety of developers introduced from time to time in the old wet process, but it is nothing to the proposals that have been made as modifications of the dry plate development by the great army of photographic "faddists."

I have before stated in print, and I repeat it again now, that the manufacture of a sensitive dry gelatine plate is a matter of absolute certainty, but that where talent and progress are shown is in working out a system of development modified at will for every class of negative and for every different kind of subject. I have carefully investigated all developers that have been proposed in which there were reasonable grounds for hoping that an advance was made; but I am bound to say that I have never found any developer for any round work equal to that composed of ammonia and pyrogallic acid.

I have found a prejudice existing in certain quarters against this developer, from the fact that many of the formulas give ammonia and bromide of potassium ready mixed together as one of the solutions.

Now, this method of proceeding at once takes away the whole value of this method of development; it is absolutely essential that the pyrogallic acid, the ammonia and the bromide of potassium should be in three separate solutions, and the developer being thus capable of being varied at will according to the negative that has to be formed through its influence.

My own method of using these solutions is to have a standard solution of the strongest ammonia, 1 ounce to 9 ounces of water, every 10 minims of which will thus contain 1 minim of strong ammonia. The solution of bromide of potassium is 15 grains to the ounce of water, while the pyrogallic solution contains 8 grains of pyrogallic acid to the ounce of water. But now comes one modification on which I lay the greatest stress, and that is the addition of sulphite of soda to the pyrogallic solution.

The sulphite of soda solution is thus made: take 1 ounce of pure sulphite of soda and dissolve it in 12 ounces of water, then by the addition of citric acid remove the alkaline reaction from the soda solution by adding the citric acid little by little till blue litmus paper is turned faintly red; this is a standard solution and can be kept ready for use at any time.

To make the pyrogallic solution one precaution has to be observed, and it should be made as follows: weigh out 240 grains of pyrogallic acid, and dissolve it in 4 ounces of the above sulphite of soda solution, and then add water until you have 30 fluid ounces of solution. Be sure to mix the pyrogallic acid with the sulphite before adding the water.

Now, here you have a pyrogallic solution which will keep any reasonable time in working order, and your three solutions of ammonia, bromide and pyrogallic acid are thus always ready for use at a moment's notice. There is one addition that may with advantage be made, and that is a drop or two of glycerine to the finished developer, made according to a formula which I published years ago. Its tendency is to give a richer tone to the negative and to improve its printing qualities.

In my own practice with instantaneous pictures, I find it to be of the greatest use to give the plate a preliminary wash with water containing a minim of ammonia to every two ounces of water. It certainly increases the sensitiveness of the plate to the subsequent development, and since the time when I published this proposed modification I have had ample testimony given me as to its great value.

With standard developing solutions such as I have proposed, any class of picture can with certainty be made, and I need hardly tell those who understand dry plate photography that it is impossible to develop all different classes of subjects with the same developer, and really to do justice to the development of each plate.

I may mention in conclusion that a good standard developer for an average negative, composed of the above solutions, would be of the pyrogallic acid solution 1¼ ounces, of the bromide of potassium solution 30 minims, and of the ammonia solution 25 minims.

From this, which I may call a standard developer for an average negative, all modifications should start, bearing in mind that the pyrogallic acid has the greatest influence in the increasing density, and that when you have to photograph white dresses or houses, or other brilliantly lighted objects, the proportion of pyrogallic acid must be considerably reduced; and it should be remembered that if prolonged forcing of an instantaneously exposed negative should be required, it is wise, after the first one or two additions, in order to keep the shadows clear, and if the negative in coming up, seems to be weaker than it ought to be, some of the pyrogallic acid should also be added.

I give these hints as I have generally found that amateur friends who have consulted me as to difficulties have continued to add ammonia with the object of forcing a slow development, and have omitted to remember that pyrogallic acid and bromide are most important factors in scientific development.

July 2.

My Dear Taylor: Will you please add this paragraph. "It must always be borne in mind that a photograph is impressed upon a plate by the action of light, and is then developed. Many photographs are spoiled from insufficient exposure for the following reasons: If the light has not impressed the image on the plate no modification of the developer can bring out an image; but if too much light has acted on the plate then a modification of the developer can control the surplus light, and thus produce a good negative.

Therefore, bear in mind always that it is better to over expose than under expose a negative. In very short exposure the preliminary wash of ammonia in water will help; but even that is powerless if the light has not acted enough.

Truly yours,

H. Stuart Wortley.

I am under lasting obligations to you for your valuable Bulletin. I have read it since 1870. C. A. Teagarden, Tyler, Texas.

DEFECTS INCIDENT TO THE CONSTRUCTION AND USE OF RAPID COMBINATION LENSES.

BY J. TRAILL TAYLOR.

[Read before the the Photographers' Association of America.]

THE trade term "Little Giants" was a not inappropriate one by which to designate the class of lens of which I am now to speak, implying thereby great capabilities in small bulk. The term is quite as applicable at present as in 1866, when the first of the class made its advent.

I shall confine myself to principles, not individual productions, as none of the cemented and so-called rapid lenses of the present day differ in any essential respect from each other or from that of 1866, which was evoked into being by a Munich professor, on the requirement of the late Dr. Van Monckhoven. Already this lens bears from twenty to thirty different names, each dealer or each manufacturer introducing modifications in form of mount to warrant the coinage of a special designation.

The distinction characteristic of the objective is that it is *aplanatic*, or capable of being employed with full aperture, like a portrait lens; it is *rectilinear*, reproducing an object without curvilinear distortion; it is *symmetrical*, its front and back lenses being similar. The virtues of this lens are numerous and well recognized. There is, therefore, no need that I should speak of them. I therefore speak of certain defects met with occasionally in the productions of even the very best makers of this rapid and most useful class of lens.

A serious element of danger is to be found in the endeavors of some makers to produce lenses having what opticians term a greater intensity ratio than in those of others. The aperture of a lens is limited by the density of the glass of which it is formed. The large aperture of the modern aplanatic doublet is owing to its being formed of glass of much greater density than the ordinary optical flint and crown. The greater the density of the glass, the more may the aperture be increased while still retaining those qualities for which this lens is famous, viz., good transmission of oblique rays.

But glass of this enhanced degree of density is, unfortunately, liable to decomposition with more or less rapidity. It seems impossible hitherto to get glass makers to prepare glass of great density in which, if it does not possess a well-marked degree of color from the beginning, soon acquires it by time, hastened by the action of light.

I have never yet known glass of this nature which, if ground into a lens, would not show a well-marked degradation of color, if removed from its tube and pressed down upon a sheet of white paper. Rapidity of action obtained at such a cost is delusive. It is quite possible by employing flat curves to make a lens of safe glass which will define well in the center of the field and for a moderate distance away from the center, but the definition invariably gives way rapidly toward the margin.

A well-known London optician once submitted to the notice of the Photographic Society of Great Britain three lenses, all of the same class—that now under consideration. One of them represented an aperture of about the eighth of its focus; a second, a sixth; and a third, a fourth. The first of these he had manufactured in the regular way. Knowing that at that time a continental maker of a justly celebrated name was introducing a lens reported to have greater illumination, I inquired why he allowed these quick-acting lenses to remain in abeyance. "Look here," he said, proceeding to a cupboard, from a shelf of which he brought down certain lenses which he handed me for examination; "these are the individual lenses I submitted to the Photographic Society. Observe how the glass has changed color! Anticipating this, I would not risk my reputation by making one for sale." The discoloration was of a most pronounced nature. The deduction from this is obvious. Let those who possess lenses for which special claims for rapidity are made be careful to keep them under cover from the action of light when not in use, as the glass of which they are made contains so much lead or analogous density-conferring bodies as will insure serious discolorations, and consequent slowness of action before many years have elapsed.

A lens having what may be considered a rather small aperture may work more quickly than one having an actual aperture larger in relation to its focus.

I now pass to another defect inherent in some of these lenses—that is, their tendency to give a ghost or flare spot in the center of the plate.

Lenses prepared by the very best and most fastidious manufacturers occasionally show this defect, and in two lenses ranking in precisely the same category, one may have it and the other be quite free from the defect. This often arises, singularly as it may seem, from the very perfection to which lens-testing has been carried in the better class of manufacturing establishments. A watch dial placed at a certain distance forms the test for definition, and when the central or axial definition of the lens has been found to be correct, then is the eye-piece (one of great power) by which the image is tested removed in a line strictly rectangular to the axis until the image of the dial transmitted obliquely is found in line. It is here where the skill of the examiner is displayed. He has to adjust the lenses so as to strike the golden mean between flatness of field and astigmation. It is a peculiarity of all combinations of lenses that, if the field be made too flat, this quality is secured at the expense of astigmation, or the inability of the lens to transmit an oblique ray under circumstances giving absolute sharpness. For example, if the object to be delineated near one margin of the plate be a white cross upon a dark ground, it will be found that when the vertical lines are focused to sharpness, the horizontal lines will be out of focus; while by racking the lens in or out to insure the sharpness of the horizontal line, the vertical one goes so far out of focus as in many cases to vanish altogether, the full aperture of the lens being employed.

It would be out of place in this paper to indicate the methods employed by opticians to effect the necessary compromise between good marginal definition and flatness of field, but for our present purpose I may say that the distance at which the one lens is separated from the other is an important factor in such adjustment. But in aiming at securing the compromise in which lies such perfection as they consider attainable, opticians sometimes ignore an evil that, under certain circumstances, results from adopting the standard that they do.

With the most perfectly corrected lens it often happens that, when employed for out-of-door work, and used with a small diaphragm, there will be a distressing spot of luminousness on the centre of the plate. This is not peculiar alone to the cemented rapid lens, but was a well-recognized characteristic of the now unused globe lens. It is a peculiarity of almost every existing portrait combination, and sometimes also of single landscape lenses. When lenses are used in the studio for portraiture or groups it is never seen, but when a bright sky forms a portion of the included subject then it is apparent, but mainly so only when there was a small stop, for the smaller the diaphragm the more pronounced will be the flare or ghost-spot. I observe here, although slightly outside of my subject, that there is no lens made, even the simplest magnifying glass, that has not two foci, one of them, the principle focus, caused by the refraction of the transmitted rays, the other being much closer to the lens and caused by an internal reflection to which a portion of the light has been subjected. This it is which operates in the case of a ghost produced by a single landscape lens, and it is remedied by displacing the diaphragm from its position to the extent of from a quarter to a half inch, the ghost in such a case being an image of the stop which is in one conjugate of the abnormal transmission, the sensitive plate being in the other. Disturb the relation of the first, and the second vanishes.

This explanation does not meet the case where a combination is concerned. Premising that the ghost is never discernable when working inside a studio, but only when operating outside with a moderately bright sky, or when taking the interior of a church or similar building, I here repeat what I have recommended as being the best means by which to discover whether a lens possesses this propensity. Screw it on a camera and bring it into a room lit by a gas flame. Go to a distance of several feet and examine the flame on the ground glass. The image will be sharp, bright and inverted. Now move the camera slightly so as to cause the inverted image to be a little to one side of the center of the focusing screen, and in nine cases out of ten there will be seen a ghostly image at the opposite side of the center. This secondary image is non-inverted, and upon rotating the camera it moves in the opposite direction to the primary image. The nature of this secondary image or ghost, and the cause of its formation, may be examined in the following way: Move the camera so that the ghost shall be near the margin, and then, placing the eye in the line of that image and the lens, withdraw the ground glass, when the posterior surface of the lens will be found to be quite luminous. That the false image is, in this case, caused by a reflection from the back surface of the anterior lens is demonstrable by unscrewing the cell containing it until it almost drops out of the tube, and then, keeping an eye on both the primary or legitimate images upon the ground glass, move or slightly wriggle the front cell, which by its being nearly unscrewed, may now be easily done, when it will be seen that the primary or legitimate image of the flame remains motionless, the ghostly image caused by the reflection from the front lens dances about all over the plate. But observe, further, there is a certain distance between the front and back lenses at which this secondary image is sharp and bright ; and in proportion as either the front or the back lens cells are screwed in or out, so does the image become more attenuated and expanded till at last it ceases to be seen altogether, while all this time the real image is not seen to suffer in any way. This tendency of the ghostly image to pass out of focus with such extreme rapidity, upon separating the lenses by a few turns of the screw, or by making them come nearer each other, provides the means by which this evil may be cured. A rapid doublet may be excellent for portraits, groups, copying and every other purpose, and yet break down when employed with a small stop in landscape work.

Within the past few weeks I am aware of a lens recently imported from manufacturers of the highest eminence, which, while perfect in every other respect, was defective as regards the ghost. As the result of careful testing in a temporary tube, it became apparent that a cure could be effected by shortening the tube about an eighth of an inch, which was done without flatness or field being impaired in any discoverable degree.

The most perfect mount for lenses of this class would be that in which the privilege was afforded the user of making an adjustment to suit work of any nature by the separation of the lenses to a very limited extent, so as to be used under the most perfect conditions for the special work in hand. With a lens of about 11 inches focus, a sliding adjustment of half an inch has been adopted with beneficial results.

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OUR ILLUSTRATION.

THE following correspondence will give some interesting details descriptive of the beautiful illustration which it is our pleasure to present to our readers with this number:

NEW YORK, May 7, 1885.

Mr. H. J. NEWTON.

DEAR SIR,—We will be pleased to have you make negatives to illustrate our BULLETIN, of steamboats in motion, to show the rapidity of the Stanley dry plates and what can be done with them to make instantaneous photographs.

Truly yours,
E. & H. T. ANTHONY & Co.

NEW YORK, May 11, 1885.

MESSRS. E. & H. T. ANTHONY & Co.

GENTLEMEN—Yours of May 7, asking me to make some instantaneous negatives of river views on the Stanley plates, with which to illustrate the BULLETIN, was duly received.

In reply, would say that I cheerfully respond to your request to furnish negatives on the Stanley plates, and will commence without unnecessary delay to make exposures of such views as, in my judgment, would be suitable and interesting to the readers of your valuable periodical, the BULLETIN.

Yours,
H. J. NEWTON.

NEW YORK, June 5, 1885.

Messrs. E. & H. T. ANTHONY.

GENTLEMEN,—To-day I have the pleasure of sending to you twenty-two negatives of views on the East River taken on the 5 x 8 Stanley plates you furnished me.

It does not seem to me that I need say much, or in fact anything, as I think you will agree with me, when you have examined the product of my labor, that the negatives speak for themselves. If I should say what might justly be said in their praise, it might look as if I was praising my own work, which I do not think in this case at least I deserve; for I cannot see any reason why any amateur, with a very moderate amount of experience, could not make just as good negatives on the plates I have used. I was delayed very much by cloudy weather. I found, however, after a few trials, that sunshine was not absolutely necessary for instantaneous negatives on these plates, and I think the majority of the negatives I send you were made when there was not sunlight sufficient to cast a visible shadow.

One of them was made on the 30th of May (Decoration Day), of the steamer *Brennan*, with a company of the Grand Army on board, by the request of the Captain.

The negative was made five minutes before two o'clock P. M. It was very cloudy and raining quite hard when the boat left her dock, and I had no idea that a good negative could be made in such a light; but as I was there to make the negative, I thought I would make the exposure, expecting to do nothing but spoil a plate, and I assure you I was much surprised when, on developing the plate, it came up fully exposed. On this negative I used a developer of increased strength and no bromide. I don't think there is a negative in the lot I send you much superior to it. For developing, I used the Standard developer, which you have published several times.

I think it is due that I should say that the plates worked satisfactorily in every respect, exhibiting extreme sensitiveness, responding readily to the developer and going steadily on to the finish, resulting in the work I send you.

Yours truly,
H. J. NEWTON.

P. S.—I used the Prosch shutter at its full speed. H. J. NEWTON.

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OWING to the crowded condition of our columns, a number of interesting papers have been left over until our next issue.

IN our article on the Buffalo meeting in the last issue of the BULLETIN, we notice a mistake in the last paragraph, in which the name should be DAVID TUCKER & Co., and not as there printed.

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E. & H. T. ANTHONY & Co.

PLEASE find enclosed $1 for the remainder of the year's subscription to the BULLETIN. It is a great help to me. I would not know how to get along without it.

Yours, respectfully,
C. A. DEAN.

I THINK the BULLETIN is the best book for reference. Wishing you abundant *success*.

Respectfully,
WM. TAUCH & Co.,
Texas.

IT looks very fine in its new dress, the contents have been improved; in fact, it could not be much better. If it keeps on through the year as it has commenced, I shall be perfectly satisfied with my investment.

Yours truly,
R. M. ALLEN,
Pottsville.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

AN adjourned regular meeting was held at the society rooms, 1260 Broadway, on the evening of June 19, 1885, at which business was considered that had been left over from the meeting of June 9.

The *President* called the meeting to order at 8:45 P. M., eighteen members being present. The reading of the minutes of the previous meeting was omitted.

The *President* announced that on June 17 the Board of Directors, constituted under the Articles of Incorporation of June 9, met, organized and adopted a new constitution. Under it, new officers are elected by the Directors; the only new office that had been created was that of Recording Secretary, who kept the minutes of meetings of the Board.

The following gentlemen were announced as the officers under the new corporation: President, F. C. Beach; Vice-President, Dr. John H. Janeway; Corresponding Secretary, Chas. W. Canfield; Recording Secretary, C. W. Dean; Treasurer, Joseph S. Rich.

The Board of Directors are: F. C. Beach, Dr. John H. Janeway, C. W. Canfield, C. W. Dean, Joseph S. Rich, Henry V. Parsell, George H. Ripley, R. A. C. Smith, Gilbert H. Robertson, Dexter H. Walker and C. Volney King.

From among the members of the Board the *President* appointed the following standing committees:

Purchasing Committee—F. C. Beach, George H. Ripley, R. A. C. Smith.

Finance Committee—Henry V. Parsell, Dr. John H. Janeway, C. Volney King.

Membership Committee—Gilbert A. Robertson, George H. Ripley, R. A. C. Smith.

House Committee—Chas. W. Canfield, C. W. Dean, Dexter H. Walker.

Librarian—Joseph S. Rich.

The *President* stated that printed briefs of the Constitution had been mailed to members, and if any had not received a copy they should communicate with the Secretary. He also spoke of an intended excursion around the harbor on June 27, and invited those present to attend.

The following resolution, offered by Dr. Janeway, and seconded by Dr. Arthur H. Elliott, was then carried:

Resolved, That the President, Secretary and Treasurer be directed to transfer all the property of this society to the Board of Directors of the Society of Amateur Photographers of New York, constituted under the Articles of Incorporation, dated June 9, 1885.

Mr. BEACH then exhibited and passed around some specimens of gelatino-bromide ferrotypes, invented by Mr. Jos. Gray, 49 Blackett street, Newcastle-on-Tyne, England, and sent to him by Mr. Thos. Bolas, of the *Photographic News*. He had received two dozen of the sensitive plates, as sold by Mr. Gray, and that day had tried two in the camera, endeavoring to develop them with his pyro and potash developer. One had an exposure of five, the other of fifteen seconds; the latter proved to be the best of the two, but both were so fogged as to be unsatisfactory. He hoped to discover the right development, and would make known the results. The specimen ferrotypes shown were quite clear, but did not possess the crispness noticeable in those made by the wet process. It was quite a step in advance, the President remarked, to be able to supply an article with which the amateur could, at one operation, obtain a positive picture in the camera, and he expected that further improvements would be made in this direction.

In his directions, Mr. Gray states that a correct exposure is very necessary, that great care must be exercised in the development of the positive, owing to its being viewed by reflected light. The details and shadows must be preserved to a greater extent than in a negative; otherwise, by long development, the picture will be flat.

He employs the pyro and ammonia developer and adds something to the ammonia, which he keeps secret. He sells a separate solution of ammonia. The pyro solution is made by dissolving 10 grains of pyro in 20 ounces of water; this is called A. By mixing equal parts of A and the ammonia, and flowing immediately over the exposed plate, development proceeds, which must be continued until the high lights exhibit plenty of vigor and the shadows are well preserved. Then the plate is washed in running water and fixed in a fresh hypo solution of ordinary strength. After careful washing it is quickly dried, though not as quick as by the wet process, by putting in a drying cupboard through which a current of warm air passes at a temperature of 80 deg. F. It will dry in this way in five minutes. Respecting the varnishing, which is so essential in the wet process, he states: As the gelatine film is more tenacious than collodion, varnishing is not necessary. The enamel effect is preserved without varnishing; there is no objection to the use of any good dry plate crystal varnish.

Mr. BEACH next called attention to two packages of pyro put up in 5-grain papers similar to homœopathic powders, which had been presented by Messrs. Anthony & Co.

Mr. NEWTON opened a box and explained how easily the powders could be divided, in case only 1, 2 or 3 grains were desired.

Mr. WALKER suggested that other chemicals ought to be put up in convenient packages for use by the amateur.

Mr. ROBERTSON moved that a vote of thanks be tendered Messrs. Anthony & Co. for the above-named chemicals, which was followed by a motion by Dr. Janeway, thanking them for the donation of several fine photographs made by Mr. Roche on Stanley plates on Decoration Day, and also for other past favors. Both motions were carried unanimously.

Mr. RICH remarked that if plate makers would not cut their plates wedge shaped, it would be a great convenience to the amateur.

Mr. NEWTON proposed a resolution requesting the dry plate makers not to cut their plates wedge shaped, but as Mr. Walker wanted to make it more complete, he (Mr. Newton) withdrew it.

Mr. MAGHEE exhibited two 5 x 8 negatives made from Stanley plates, which had peculiar colored patches and steaks over their surface somewhat thinner than the color of the regular film. Considerable discussion followed.

Dr. JANEWAY remarked that he had had a similar experience and thought the trouble was that an old hypo bath had been used, and the hypo was not thoroughly eliminated from the film.

Mr. MAGHEE maintained that the bath was comparatively fresh, and thought that was not the cause.

After much questioning, it was brought out that he transferred the plates directly from the developer to the alum bath without washing which accounted for the peculiar patches, as the developer uniting with the alum in certain spots set up a peculiar chemical action which prevented the film from fixing out uniformly. It was suggested that a careful washing or soaking of the plates in running water for two or three hours, and a re-immersion in a a fresh hypo bath, might eliminate the patches.

The *President* showed a negative made on an Eastman plate (5 x 8) handed him by Mr. Maghee, which exhibited very strong mat markings around the edges, and had also peculiar black opaque comets scattered irregularly over its surface.

Mr. NEWTON thought the trouble was due to the pouring on the developer before the particles of pyro had become thoroughly dissolved ; hence, as they floated about on the surface of the film, they adhered to it and formed the black spots. He had often experienced that difficulty, and while Mr. Maghee might feel certain in his own mind that the pyro was carefully dissolved, he (Mr. Newton) was convinced that the spots were due to undissolved pyro.

Mr. THOMAS PRAY, Jr., spoke of some experiments he had tried in this direction. He found the undissolved pyro did not always produce the spots.

Mr. WALKER having his resolution on dry plates ready, offered it, as follows :

Resolved, That this Society condemns beyond expression the varying thicknesses of glass used by some manufacturers of dry plates. That, in our opinion, a little extra care in the selection of the glass and its arrangement into classes of thickness suitable to the difference in sizes of the plates, would obviate and fully remedy this great evil. That under present circumstances no amateur can purchase any brand of plate with certainty of uniformity of thickness and size ; and any manufacturer who will afford the remedy needed, merits the thanks of this Society and of all lovers of the science. That the President forward to every manufacturer a copy of this resolution and the remarks following its introduction.

The resolution was carried unanimously.

Referring to the resolution, Mr. Walker remarked : Comparatively speaking, dry plates are only of recent origin. The improvements in their manufacture, however, have been most rapid and satisfactory. The whole photographic fraternity fully recognizes the skill and research that has brought about this great result. But, in other respects, the makers have signally failed to keep pace with the requirements of the amateur, and the resolution bears directly upon this question. There can be no doubt that the makers of dry plates are in sympathy with us, and, upon proper representation, will conform to any reasonable suggestions we may make. What are the requirements of us amateurs, in so far as the resolution deals with them ? Uniformity of *size* and *thickness*. These are two most important elements essential to the success of all amateurs. Last summer, while in the Catskills, I ordered a large number of Eastman plates to be sent to me from New York. In course of time they arrived safely, and I proceeded to fill my holders with them. Many of them were two long, others too thick, and some too full of pin holes for use.

Of the six dozen boxes of 5 x 8 plates ordered, I found twenty plates which I could not use. I brought them back to this city when I came, and finally cut them into 4 x 5 plates, using them, or such of them as were free from pin holes, in a smaller camera. I have found many plates too thick, as stated, and some so thin that the least jar in carrying would cause them to break. This is not by any means confined to any one brand of plates. I still use Eastman plates, and prefer them to many others. I shall leave for the Catskills again in a few days for a month's trip, and the only fear I have is that my plates won't "fit." In order, therefore, to get at the bottom facts of this important branch of photography, we should examine all that bears upon the subject. On looking at different holders, I find that the grooves into which the plates are to be put are, in the majority of instances, too large. Why is this ? The answer is that allowance has always been made for the accommodation of oversized plates, so that a properly sized plate, as to length, width and thickness, rattles about the holder, and is easily broken, to say nothing of the chafing of its margin. Now, this can be easily made right. Let the plates of different sizes be made of different sizes or thicknessess of glass. Make a 5 x 8 plate of exact length, width and thickness, the latter say one-eighth of an inch; make a 4 x 5 plate and under, say one-sixteenth of an inch thick and otherwise exact. Let all makers agree upon a common standard as to these points, and when I order six new holders, as I have just done, the plates will fit, and I will be sure that the makers of the holders will have a standard to work by, and not be left to guessing as to the greatest possible size plates are likely to turn up, thus making my holders and their contents "shake like dead men's bones." I feel certain that the makers who first take the little additional trouble to overcome this crying evil will please the amateur and their plates will sell like "hot cakes."

Another thing. What is the necessity for lugging about an unnecessary weight of glass? Large-sized plates must be thick, but, on the other hand, the smaller-sized plates can just as well be thin. I implore manufacturers to look into this.

The *President* remarked that in the smaller-sized plates it was the invariable rule to find one or two in each package which were either too thick to fit the holder, or cut too wedge-shaped to be intended for that purpose. It was an evil that was very general, and there was scarcely an amateur with whom he had conversed but what had the same difficulty. It was time the manufacturers paid attention to this matter, if they desired to retain the good-will and trade of amateurs.

Mr. THOMAS PRAY, Jr., recounted his experience with uneven and wedge-shaped plates. He had used a large number, all manufactured by the leading makers, and was obliged to lose many plates because of these defects. Out of a dozen Cramer plates only five could be used, in one box that he had opened. He went so far as to urge amateurs not to purchase plates from manufacturers who persistently sent them out in an unsalable shape.

Mr. NEWTON related several instances of plates being too thick or too unevenly cut, and thought the manufacturers should be instructed not to do it.

After some further discussion on the subject, it was moved by Dr. JANEWAY, and seconded by Mr. ROBERTSON, that the Society of Amateur Photographers of New York adjourn *sine die*.

The motion was carried, and at 9:45 the meeting adjourned.

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PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

A REGULAR meeting of the Pacific Coast Amateur Photographic Association, was held July 9, at No. 318 Pine street, San Francisco, Mr. TYLER in the chair.

The members are gradually returning from their summer jaunts and, consequently, this meeting was more interesting than the previous ones during the summer; of the June meeting, so little could be said that I neglected to prepare a report thereof for publication.

The Executive Committee reported that no new particulars concerning the Philadelphia exhibition had been learned since the last meeting, and requested that the names of members intending to exhibit be handed to the committee. The following names were handed in: Messrs. Lowden, Gibbs, Tashiera, London, McConnell, Speyer, Blackburn and Tyler.

For the past two years, the association has exhibited at the annual Mechanics' Fair. It was resolved not to exhibit this year, but that a society exhibition should be held at the rooms of the Art Association some time in the autumn of 1885.

On motion, resolved, that a field day be held on July 15, at Gaucelito, and that a prize be given for the best negative obtained on that occasion. Messrs. London and Tashiera were appointed a committee of arrangements.

A discussion on composition pictures arose, which led to a resolution that a subject be chosen, and that a prize be offered for the best picture on said subject.

Many subjects were proposed, among others the following:

"Maud Muller on a summer's day, etc."
"This is the dog that worried the cat."
"By the brookside."
"Little Jack Horner sat in the corner."
"Down by the old mill stream."
"Where are you going, my pretty maid?"

The choice of a subject was finally left to a committee.

A large number of negatives and prints were passed around for inspection. Mr. London showed a large number of excellent landscapes from plates of his own manufacture.

Mr. London exhibited a number of instantaneous views, obtained during the Master Mariners' regatta, on July 4, and also a print, from a single-plate negative, of two little girls wearing broad-brimmed hats, and carrying dolls. The negative was made in the open air, with a drop shutter. The pose, lighting and expression are very fine, and the picture was much admired.

Mr. Tyler exhibited a large collection of prints from half-plate negatives, and also three 8 x 10 enlargements.

Mr. Woods passed around several enlargements on bromo-gelatine paper, and gave a short lecture on his system of enlargement. Mr. Woods gives an exposure of about 20 seconds to a north light, with a stop 84 U. S., and develops with oxalate, one to four, with a large proportion of bromide. His experiments have been very successful, and his work was greatly admired.

A revolving shutter which Mr. McConnell has just built for Dr. Passavant was minutely inspected. In this shutter the disk makes a complete revolution, and four exposures can be made without resetting. The first exposure is very rapid, the second somewhat slower, and so on. The speed may be regulated by a small knob which controls the tension, while a dial indicates whether the shutter is set for exposure No. 1, 2, 3 or 4. The shutter works smoothly and without jar, and should do good work.

A laughable incident took place, which I think will bear telling. The rooms of the association are in a large three-story building, and adjacent to the business office of one of the members, whom we will call "Hypo." The outside door of the building has a peculiar catch. A member coming late to the meeting could not open this door. He tried shouting, but it was no use, and his grief that he should be thus debarred from the intellectual converse of his fellow members was fast becoming too deep for utterance, when a brilliant idea struck him. Hastening to his own office, half a block distant, he rang the telephone bell and was soon put into communication with the office of "Hypo," who, hearing his bell ring, went to the telephone and was astonished by the request that some one should come down to the door and let Mr. Member in. His ingenuity was rewarded, and a hearty laugh enjoyed at his expense.

Before closing this letter I will mention that our members are still anxious to exchange prints with other amateurs, and that letters addressed to me at No. 318 Pine street, San Francisco, will meet with prompt attention.

W. B. TYLER,
Corresponding Secretary, P. C. A. P. A.

PHOTOGRAPHER'S ASSOCIATION OF AMERICA.

BUFFALO, N. Y., July 16, 1885.

THIRD DAY—MORNING SESSION.

The convention was called to order at 10 A. M. by the *President*, JAMES LANDY, of Cincinnati, Ohio.

The *President*—The first thing in order will be the paper by Mr. W. J. Hurd, who then read his paper, "Photographic Portraits *versus* Camera Pictures" (see page 453).

The *President*—The next business in order will be the report of the Committee on Nominations.

Mr. Ryder then read the following report of the Committee on Nominations:

REPORT OF COMMITTEE ON NOMINATIONS.

President, Charles T. Stuart, Hartford, Conn.

Recording Secretary, H. McMichael, Buffalo, N. Y.

Treasurer, G. M. Carlisle, Providence, R. I.

Executive Committee, W. H. Potter, Indianapolis, Ind.; G. Cramer, St. Louis, Mo.

Place of meeting, St. Louis, Mo.; time, May, 1886.

Then followed the usual list of vice-presidents from the various States.

SECOND CHOICE.

President, G. M. Carlisle.
Treasurer, H. McMichael.
Secretary, R. Benecke, St. Louis.

THIRD CHOICE.

President, T. W. Bankes, Little Rock, Ark.

The *President*—I have just received the following dispatch from Denver, Col.:

DENVER, COL., July 15, 1885.

J. Landy, President Photographers' Association, Armory Hall, Buffalo:

May your convention be the largest and most successful ever held.

J. E. BEEBE.

Also, another dispatch, from Clarkesville, Tenn., dated July 15, 1885:

To the President of the Photographic Association, State Arsenal Building, Buffalo, N. Y.:

Photographers in convention assembled, greeting. Although I am not there, my heart is with you. Good cheer to all.

J. T. HENDRICKS.

The next paper will be by Mr. J. Burton, "Development." The paper, not being present, was not read.

J. Traill Taylor, of New York, then read a paper entitled "Scientific Development," by Colonel Stuart Wortley (see page 457).

A vote of thanks was then tendered to Colonel Stuart Wortley for his very able paper.

Mr. INGLIS—Mr. Chairman, before proceeding to any further business, would it not be in order, or would it not be interesting and instructive as well, to have a little discussion upon this paper just read?

Mr. GENTILÉ—I move that we now do open a discussion upon the paper just read.

Mr. JOSHUA SMITH—Before the motion is put, allow me to say that Mr. W. H. Potter has also a paper on development.

Mr. Potter's paper was postponed until after noon.

On motion, the discussion was postponed until the evening session.

The *President*—The next business in order will be taking the ballot for the best collection of photographs in the exhibition. I appoint H. S. Bellsmith and D. A. Clifford as tellers.

A ballot was then had, and the tellers reported as follows:

Mr. Ryder, 93; Mr. Gerrig, 11; W. H. Potter, 6; H. McMichael, 4; Mr. Cramer, 3; Mr. Falk, 1. Total number of votes, 123.

The announcement of this result was received with a good deal of enthusiasm. The President then called Mr. Ryder to the platform and pinned the gold medal of *The Eye* on his coat.

When Mr. Ryder said:

Mr. President and Gentlemen: I want to address you as my friends. I am very happy for the expression of kindness that you have shown to me this morning. I came here with a little fair exhibit of pictures, without any idea of taking or attracting more than common notice. I have been made a little proud by the many comments that have been made favorable to it, and now, by the act of the convention, in voting me so fine a majority, it makes me indeed happy. I want to say that in my paper yesterday there might be the impression that I was working the camera, but I have not engineered the camera for a good many years. All the credit that I have got here belongs largely to the people in my house. I desire to make that remark. I thank you all very much, and I wish you were all as happy as I am this morning.

Just before the taking of the vote the following discussion took place:

Mr. INGLIS.—While this preparation for voting is going on, I wish to inquire if it is understood that foreign exhibits are exempt from the ballot.

The *President*.—Yes, sir.

Mr. INGLIS—That is what I understood; but I was not sure. We have seen it in the foreign papers, in papers in this country, in photographic journals, and in other papers that give us information throughout the world, especially when we were at any exhibition in the foreign countries and this country, the credit has been given to the American photographers as having produced the finest works of art by photography. I always disputed this matter, but I just want to draw the attention of the association to the fact, and ask why it is that this association is going to exempt the foreign exhibition from competition in this award, this offer. The suggestion would be made at once that there was something to exempt. That idea would arise at once, that the American productions of photography were not as good as the European; this would prove it.

Mr. GENTILÉ—Mr. President, my reason for making that statement to you with regard to that matter was on account of information conveyed to me by one of the members of this association, so that I was left to believe that the foreign exhibit was made in the interest of some firm advertising their albumen paper. If the photographers themselves made the goods they exhibit, I think that they would be fairly entitled to compete for this prize. However, I am willing to leave it to the association whether the foreign exhibit shall be included, and whether it should be thrown open at this time.

Mr. CRAMER—I wish to correct a remark that has been made, that if the foreign exhibit has been made upon a certain brand of paper—I understand that is the assertion—it should be excluded. I assure you that that is not the case. I have had a good deal of correspondeuce, and a good deal has been addressed to Mr. Landy; some was addressed to me. I can assure you that Mr. Gennert has used—and he is present here, and can vouch for it—very great efforts in Europe for the purpose of collecting the pictures from German artists.

The *President*—Before we proceed we had better have this matter settled.

Mr. CRAMER—I think Mr. Gennert is in the house, and he may be able to state how this is.

The *President*—I have a letter here in reference to this matter. There is an invoice here of the different exhibits, and as it is from an albumen paper factory, as I judge from the fact of the letter being on one of their letterheads, it might lead me to suppose that something of the kind was the case; however, I will read the letter and you can then judge. The letter is as follows:

G. GENNERT,
Importer of the Eagle and S. & M. Dresden
Albumen Paper, and Photographic
Materials in general,
105 William street.
Cablegram address, Gennert, New York.

DRESDEN, June 26, 1885.

To the President of the Photographic Association of America:

SIR—Having been appointed a member of the Committee for Procuring Foreign Exhibits, I have the honor of reporting the following:

Through the photographic journals in Germany I caused to be published an invitation to the photographers to participate at the exhibition to be held in the city of Buffalo, N. Y., from July 14 to 18, 1885.

As an inducement for as full a representation of the German art as possible, I offered two prizes; the first a prize of three hundred marks, the second a prize of one hundred and fifty marks (both prizes to be made by me personally), for the two best collections exhibited. The award is to be made by judges appointed by the association, or if this could not be done by the association, the judges to be appointed by the President and the Vice-President of the same in their private capacity.

On my arrival in Germany I found that although many had promised to send full exhibits the time had not been sufficient for preparing them. Five or six firms only were able to finish the intended work in time for the exhibition.

Although the object has not been fully accomplished, enough work has been sent to allow of a fair competition for the prizes above mentioned.

Having done the best I could for the short time, I trust that the committee will accept favorably of my efforts, and that these may contribute to the completeness of the exhibition and to the success of the association.

The exhibits not finished in time for this year's competition might be entered for next year's exhibition, so that the exertions may attain their intended object.

As the German photographers will also have an annual exhibition, I would suggest that the association adopt a resolution requesting its members to send specimens of their work to Germany for the next year's exhibition (time and place to be published hereafter), and I would with pleasure undertake to send and to return said specimens, believing thus to create an international interest. The association, I hope, will favorably consider this matter.

The balance of my time I shall devote to procuring the best of albumen paper, so that the photographers may hereafter find it to their thorough satisfaction.

Yours, very respectfully,

G. GENNERT.

Mr. CRAMER—As this is now before us, it is evident that two prizes have been offered for the work of foreign artists. I think that the other medal might be given to American artists, and in that way we can satisfy both.

The *President*—I suppose that it is the right thing to have this disposed of at once.

Mr. CRAMER—He asks the association to appoint a committee.

The *President*—If the association is willing to act in the matter; if not, the President or Vice-President is to do it without the consent of the association. The consent of the association not being given, it becomes an individual matter.

Mr. CRAMER—You, as the President, can do it privately.

The *President*—Yes, sir.

Mr. GENTILÉ—I move that this association vote upon the prizes of Mr. Gennert as well as on the other.

JOSHUA SMITH, Chicago, Ill.—Before that motion is seconded, I would ask who is going to get the benefit of all this. Some of these pictures are from Hamburg, some from Leipsic and some from other German cities. Now, there are different photographers interested in the subject– who is to get the cake?

The *President*—There is the first and second best. There are five exhibitors; I suppose the two best will get the prizes—first and second.

Mr. INGLIS—I question if any photographer here knows much about the difference between the exhibitors in the German collection. They are looked upon as foreign exhibits, and not as individuals are in Germany. We do not know their names.

Mr. BELLSMITH—I think that we are rather driving away from the point in hand; the motion has been carried to vote upon the medal presented by Mr. Gentilé, and he has stated that it is to go to the best American exhibits; he explicitly stated that, and this discussion regarding the foreign exhibit is out of place at this time.

Mr. GENTILÉ—The intention was that it should be given for the best display by any member of this association. Since that it has simply been mentioned about the foreign exhibits, and as there was a prize to be given to them it occurred to me, as well as to Mr. Cramer, that the best way was to leave the matter as it is, and to give this medal to the American exhibitors only.

The *President*—Then we will let the matter stand just as it is, and the tellers will proceed.

Mr. POOL, of St. Catharines, Ont.—I think that the members of this association can very materially aid in the balloting if they will not fold up their ballots, but just drop it right in unfolded.

The *President*—The members will bear that suggestion in mind.

Mr. S. B. FELL—I was going to make a suggestion, and that is, to have an evening session. It seems to me that there are a great many matters that the members would like to discuss, and, of course, it takes a little longer in voting in this manner to get through with the business than it would otherwise. Now, if the paper by Mr. Potter was read this afternoon, we could postpone the discussion on that until evening, and have the evening session specially for that, so that the members would be prepared a little better for it. I think that that would be better, and we could occupy the time more profitably in the evening with an evening discussion, and perhaps that would be the best way; however, I make that motion.

The motion was seconded by Mr. Inglis, provided it was a unanimous vote.

Mr W. J. BAKER rose to a point of order, that there was now a motion before the house, and another one could not be well taken.

The *President* ruled that the point of order was well taken, and the result of the balloting was announced, as before stated.

Mr. POTTER, of Indianapolis, Ind.—I think, now the voting is over, and we have disposed of this subject, that a vote of thanks should be tendered to Mr. Gennert for the magnificent display of foreign pictures secured by him, and that a committee of three be appointed to award the prizes of the association. I make this as a motion.

The motion was seconded and agreed to.

The *President* then appointed the following committee: Messrs. G. Cramer, H. S. Bellsmith and G. M. Carlisle.

Mr. INGLIS then moved that when we adjourn this afternoon, we adjourn until 8 o'clock. Agreed to.

Mr. ATWATER—I see in one of the leading journals of photography, *The Eye*, that some mention has been made of a matter that I think ought to be explained, and that an investigating committee ought to be appointed in regard to our former convention. There are ugly rumors in regard to the matter, and I think that it should be explained, and that reflections ought not to be cast upon the officers in this way.

Mr. STEBBINS—I think that this business is entirely foreign to the work of the association, and I object to its being brought into the association. It is a matter of the past, and it is not necessary to ventilate it or to have a newspaper article written upon it.

A Member—Mr. Gentilé can answer these newspaper articles.

Mr. INGLIS—I think that this is a matter of vital importance to this association, and I would move that the President appoint a committee of three to investigate this matter and lay it before this association before it closes—to investigate the accusation; it is not only in Mr. Gentilé's paper, *The Eye*, but the report is in every mouth.

Mr. SAUNDERS moved to lay the whole matter on the table. This motion was lost.

The question recurring on Mr. Inglis' motion that the President appoint a committee of three to investigate this matter and report before the close of the meeting, it was agreed to.

The *President* then appointed the committee as follows:

Mr. Atwater, Mr. Inglis and Mr. Gentilé.

Mr. CRAMER—I am not sufficiently posted in our Constitution and By-Laws, but I would like to know if the reading of the report of the treasurer is not on the order of business. I have not heard the report read, and I should think it was important that it should be read.

The *President*—Section 4 of the Constitution, Article 3, in reference to the treasurer, says:

"The treasurer shall collect and take charge of the funds of the association. He shall pay no moneys unless by order of the president and secretary. He shall present a statement of accounts at each annual meeting, that they may be audited. He shall report the names of those who have failed to pay their annual contributions. The treasurer shall receive five per cent. of the gross annual receipts, as full compensation for his services.

"In case of the absence of the treasurer, he shall appoint a deputy, with power of attorney, to fulfill his duties. The treasurer shall be required to give an indemnity bond that shall be deemed sufficient and satisfactory to the members of the executive committee, and said bond shall remain in the custody of the president of the association."

Mr. CRAMER—I thought there was such a proviso, and was astonished that the report was not made.

The *President*—The treasurer will make his report to-morrow morning or Saturday.

Mr. CRAMER—I would like to get the sense of this house, if they deem it proper, as to the offering of prizes or medals for exhibits. I would like to hear the sense of the house, if they deem it appropriate, as to this subject of offering medals or prizes for exhibits. If this is so, I shall take the proper course in relation to it, and move that we have ten medals for the next convention. I think myself it helps; it is a stimulus to the bringing out of a fine selection of pictures, and if we award medals to more than one person, for instance to six, eight or ten, there will be a good chance for others to get a prize. I think that this could be done, and it would have a good effect. In this manner we can reward the meritorious. I am well satisfied that this is a feeling entertained by a good many in this convention. If there is only one it might be difficult to decide who should have the medal; but if there are several medals several people will be made happy. I think it would be a great help to the association, and it would bring out a good many fine exhibits, which otherwise will not come. I therefore would like to make that as a motion.

Mr. INGLIS—I would like to inquire if it is in accordance with the rules of the association to do this.

Mr. CRAMER—Yes.

Mr. INGLIS—Very well; gentlemen, I would say something with regard to this matter. I do not think that a mistake would be made if this was done. I think it will bring out the best exhibition of work that our association has ever had. There will be a chance for every one, and this will stimulate to the highest attainment in their ability. As has been said, if there are ten awards every one will say, "I will have a chance to get one."

The motion was then seconded by several.

Mr. INGLIS—Mr. Cramer will have an opportunity in this way of assisting the association with the $500 that he has subscribed.

Mr. CRAMER—There is one mistake that the gentleman makes. My intention was not to make a difference in the medals, that is to say, number them 1, 2, 3 and 4, but merely to make them all alike. They would then be an award of merit, otherwise there would be too much jealousy. I do not want this considered as a private matter at all, as it is very important; I only want my motion to be considered, that is if the association finds it proper and appropriate. I now move that this association devote the sum of $200, which sum may be increased by voluntary contributions by others, and that this sum, so made up, shall be awarded to the ten best exhibits, reserving two for the foreign exhibits and devoting eight to the American exhibits.

This motion was seconded by Joshua Smith, of Chicago, and agreed to.

Mr. INGLIS—I am correct in saying that is the intention?

Mr. CRAMER—Yes, sir.

Mr. INGLIS—If there are ten, that will be a thousand dollars; is that right?

Mr. CRAMER—Yes, sir; we can make them of gold then.

Mr. INGLIS then moved that the balance of cash over one thousand dollars be paid in cash *pro rata* to each winner of a prize.

This motion was seconded.

Mr. POTTER—I think that is a very good motion, for this reason: it is an expensive thing to bring pictures here from a distance, necessarily, and this will stimulate others to bring work, when they know they have a chance to recover some of their expenses.

Mr. CRAMER—I accept the amendment of Mr. Inglis.

A motion to reconsider was then made, that the association give $200 and the balance to be received in the way of contributions, and that the excess over a thousand dollars be divided among the exhibitors *pro rata*.

Mr. CRAMER—That there be ten medals; and two reserved for foreign exhibitors, and eight be devoted to American exhibitors, including Canada.

Mr. GENTILÉ—I want to make a remark before that motion is put. It is this. There seems to be some likelihood of being some surplus cash, and we ought not to forget a great many gentlemen who have done a great deal toward contributing toward the success of these conventions. We ought not to forget the manufacturers. They should get part of that fund which we propose to give to the most meritorious inventions exhibited in the convention, connected with photography, or to be rewarded; and, as there seems to be a likelihood or a chance of a surplus of money, I would make that motion.

The *President*—It has been moved and seconded that $200 be donated by the association for ten prizes, two to foreign exhibitors and eight for exhibitors from the United States and Canada; and that, if the amount of the contribution should exceed a thousand dollars, or be in excess of a thousand dollars, that the excess over a thousand dollars shall be divided *pro rata* among the winners of the prizes in cash.

Agreed to unanimously.

Mr. CRAMER—To make the thing complete, I will make a motion that the prizes shall be awarded to the members by ballot; and those receiving the medals shall be members of the association; those receiving the greatest number of ballots shall be considered the winners of the premium.

Mr. INGLIS—I will ask that the ballot be taken on Friday afternoon.

Mr. CRAMER—I suggest Thursday afternoon.

Mr. POOL, of St. Catharines, Canada—I can quite conceive, sir, that there will be a miscarriage of justice, if a ballot is taken on the first prize, and then on the second, and then on the third. The balloting should be all done at once, the ten names being written on a card and deposited that way.

Mr. CRAMER—Each member in voting will have a paper, which will be prepared, upon which he can write the ten names—two for the foreign exhibitors and eight for the American. In this way the voting can be done intelligently and quickly.

A member inquired whether the medals were to be given for work already done or whether it would be for new work.

Mr. CRAMER replied that it would be for new work, and not for old work.

Mr. INGLIS did not think it necessary to put that provision in; that any work which had been done, no matter when, if meritorious, might receive a medal.

JOSHUA SMITH, of Chicago, Ill.—Mr. President, I would suggest, in order to prevent confusion, in giving the ballot, that each man voting sign his name to the ballot.

Mr. INGLIS thought there was no use in discussing the matter, and thought that it might be left to the Executive Committee, who will have ten months in order to prepare for it.

Mr. BELLSMITH moved that the whole matter be left to the Executive Committee.

Agreed to.

Mr. J. TRAILL TAYLOR then read his paper: "Defects Incident to the Construction and Use of Rapid Combination Lenses" (see page 459).

On motion of Mr. RYDER, a vote of thanks was tendered to Mr. Taylor for his able paper.

The *President* announced that the group would be taken this afternoon at four o'clock, in the rear of the hall, on a plate 18 x 22. A vote of thanks was tendered to Col. Stuart Wortley for his excellent paper, and also to the authors of papers which have been already read. On motion, the convention then adjourned until 2 o'clock P. M.

THIRD DAY.—AFTERNOON SESSION.

The Association was called to order by the *President* at 2 o'clock P. M.

The first thing in order will be a paper by W. H. Potter on "The handling and Development of Dry Plates." (See next number of BULLETIN.)

Mr. POTTER then read his paper.

On motion of Mr. Taylor, a vote of thanks was tendered W. H. Potter for his very fine and able paper. A paper was then read by Mr. Taylor, written by Mr. William Ashman: (See next number of BULLETIN.)

The question box was then opened, and the following questions were read:

1. What causes blisters, and what will cure them, on brilliant albumen paper?

2. Paper mottles if under-silvered; as soon as silvered so as not to mottle is full of black specks. What is the cause?

3. What is the best way to make statue busts from life?

4. Is it advisable for photographers to make their own dry plates?

5. Are the deliquescent properties of some samples of sulphite of soda an indication of an impurity?

6. What is the cause of millions of little black specks in albumen paper after being silvered and dried? Sometimes they do not appear

7. What is the cause of vignette prints not toning around the edge of the vignetting? The picture looks all right in the center, but looks bricky as it blends away.

8. What way is proper to cut up a sheet of albumen paper, say for cabinets, to print?

9. Can exposed plates he restored to sensitiveness?

C. C. KENNEY,
HACKETTSTOWN,
New Jersey.

10. A dry plate ceases to be sensitive after developer is washed off. Please explain why.

11. Ruby light is injurions to the eyes.

12. In what way is the visual organ affected?

13. How can a dry plate be treated to last as long and as well as a wet plate?

14. What formula will give a negative varnish that will not "stick" in hot weather or crackle with age?

15. Will some one explain whether six sheets of paper can be toned with one grain of gold?

16. Do you believe in lots of light in a studio, or a subdued light?

17. Please give the chemistry of chlorate of ammonium.

18. Has any one ever experimented on solarizing an emulsion by action of heat, or reducing it to any desired degree of sensitiveness by the use of bichromate of potash—or can such be done to be of service to a plate maker?

19. Should the free silver be all washed from prints before toning? Will not a trace of it assist toning?

20. What is the best method of collecting bad accounts?

21. If sun comes in gallery skylight, what kind of curtains do you recommend—blue or white cotton, or either?

What is the best and cleanest developer for dry plates that won't soil the hands?

22. Did any one see anything of the *group* taken of the Convention at Niagara on Wednesday? I didn't.

23. How to prevent tear drops.

24. Should pyro be used after it turns dark for developing, and what is the best preservitor to keep it clean in stock solution No. 1?

The answering of the questions then was proceeded with. To the question 21 the following answer was made:

Mr. G. N. Crowther—I should answer that question in the words of the Irishman, "Nayther." The best thing to use under skylight, in my experience, where sun comes in, is what is called onion skin paper. It will keep the sun out, and at the same time answer all purposes.

A member inquired whether this paper would gather the dust, and in that way form an obstruction to the light.

Mr. Crowther—It gathers the dust, but it is easily shaken off.

Q. 24. Should pyro be used after it turns dark for developing, and what is the best preservitor to keep it clean in stock solution No. 1?

Mr. Inglis—Sulphurous acid is the best thing I know of to keep it—not sulphuric acid, but sulphurous.

Mr. Gentilé—I think the solution is to be used in the proper way and as soon as it turns muddy, it can be attended to. As long as it it keeps clear the developer is good for many plates; far better than a newly made up developer.

Q. 23. How to prevent tear drops.

Mr. Inglis—What of?

The *President*—It does not say.

Mr. Taylor—Make a rise in the prices.

Mr. Inglis—There are tear drops which come in different ways.

Mr. Gentilé—The suggestion has been made to raise the prices.

Mr. Inglis—Mr. President, the reason why I asked the question I did is, that we may know what kind of tear drops is referred to. I sent some plates to a party in Philadelphia who objected to using them any further, because there were tear drops upon them when they were drying. I suppose that the party who asked this question referred to the tear drops on silver paper, but you see the tear drops could come in with the gelatine plate as well as with the albumenized paper, the silver paper. Now, I will answer both questions, both for the dry plate and for the paper. Wipe the dry plate off with a squeejee, just getting rid of the superfluous water, and that will remove the tear drops, if you happen to get any. That is the best way to cure it. Stick it back again into the water so it don't come on. Now, in regard to the albumenized paper and silver paper spoken of; after it is taken off the silvering there will be no tear marks, and the paper will be better for it.

Q. 22. Did any one see anything of the group taken of the Convention at Niagara on Wednesday? I didn't.

Mr. Inglis—Neither did I.

Mr. Gentilé—I saw a great many negatives.

The *President*—I asked Mr. French if he saw anything of the group, and he said he made a group of 800 members of the Convention at Niagara Falls.

Q. 2. Paper mottles if under-silvered; as soon as silvered, so as not to mottle, is full of black specks. What is the cause?

Mr. Inglis—One containing salicylic acid.

Q. 20. What is the best method of collecting bad accounts?

One member suggests to rub it out, and another suggests to put the account to the credit of profit and loss.

The *President* stated that he had succeeded in collecting bad debts by joining an association formed in New York, which association had agencies in different States, for the purpose of collecting bad debts. The agency was located in the Bible House in New York. The manner of doing business by this agency was to send a series of letters. The first one was in a black envelope; the second was in a blue envelope, and the third one followed, and then the name appeared in the Gazette, if the party did not pay up. The President stated that there was a branch of the association in Buffalo. Mr. McMichael stated that he was acquainted with the branch of the association in this city.

Mr. INGLIS wanted to inquire whether this plan would do for the photographers.

The *President* replied that he got his money in advance, and it was the best way to get the money in advance, if possible.

Mr. INGLIS thought it was a splendid custom to get the money in advance. This plan would place the photographers on a level with dealers and manufacturers.

The *President*—Parties frequently come to me and say they do not pay in advance. I soon convince them that they do pay in advance. I ask them if they ever ride in the steam cars? I ask them if they do not pay for their ticket before they get on board the train. I then ask them if they go to the theatre, and if they don't have to pay before they go in? So I prove to them that they do pay in advance.

Mr. GENTILÉ stated that the newspapers generally got their pay in advance, but not always.

A member stated that one of his worst customers was a preacher. The President thought the preacher could pay as well as others, as he got his salary.

Q. 19. Should the free silver be all washed from prints before toning? Will not a trace of it assist toning?

Mr. MAWDSLEY—I am inclined to think a slight trace left in is better. I heard a remark in reference to toning on the edge of the vignette. I think it is a good plan to leave a slight trace of silver in, and if that is done that effect will disappear.

The *President*—My operator often speaks of that, and he says that it is the best plan to leave a slight trace of silver in to assist in the toning?

Mr. CROWTHER—One of the best toning baths known in England was obtained at the price of forty pounds. After it was obtained, it was not used, because the silver was washed out. The gentleman who obtained this bath was asked why he did not use it, and replied that it was a failure. The gentleman who asked this question went through the process then, and he took the prints and placed them in a basin of water, and transferred them at once from that water into the toning bath, and he secured a very fine tone, which was noted all over England, and also all over the Continent. This arose from the fact that there was a large excess of free silver in the toning bath. This bath was a simple lime toning bath. It had to be kept at least fourteen days before it was used. Two grains of lime to a quart of water. The lime remained in the water two weeks before it was used. This was found to be a splendid method, and in this way the gentleman collected all the chloride of silver that fell into the bottom of the toning bath, thus preserving the washings, and it was certainly one of the finest and most useful baths ever known.

Q. 17. Please give the chemistry of chlorate ammonium.

No answer.

Q. 18. Has any one ever experimented on solarizing an emulsion, by action of heat, or reducing it to any desired degree of sensitiveness by the use of bichromate of potash—or can such be done to be of service to a plate maker? There was no answer.

Q. 16. Do you believe in lots of light in the studio, or a subdued light?

Mr. GENTILÉ—I believe in a subdued light.

The *President*—I believe in having lots of light, but having the means to subdue it.

Q. 15. Will some one explain whether six sheets of paper can be toned with one grain of gold? A. No.

Mr. COLLINS—I say that we can if the sheets are small enough.

Q. 14. What formula will give a negative varnish that will not "stick" in hot weather or crackle with age?

Mr. STEBBINS—One ounce of gum sanderach, fourteen ounces of alcohol, one dram of chloroform and half an ounce of oil of lavender will do that every time.

The *President*—I have a very simple varnish, that I have used for a long time. One pound of bleached shellac, a gallon of alcohol, put in for a couple of days and filtered. I have never had any trouble from its sticking, not even in the hot weather. It is the best varnish I ever used; I have used the sanderach.

Mr. INGLIS—I think that formula you have given, with the addition of two ounces of sanderach, would answer better.

The *President*—It is the best varnish I could get.

A member asked if he had used bleached shellac.

The *President*—That is very good, and you will have no trouble if you get the varnish article; you can use it for a long time. You can use it in hot weather. I pulverized it, not very fine, but about the size of grains of corn.

Q. 9. Can exposed plates be restored to sensitiveness?

By a Member—Yes.

Mr. INGLIS—I was not aware that they lost their sensitiveness by exposure.

The *President*—He means exposed to light.

Q. 10. A dry plate ceases to be sensitive after developer is washed off; please explain why; can they be used for any purpose?

Mr. INGLIS—Not much.

Mr. TAYLOR—Yes.

Mr. INGLIS—They can be used, but not much.

Mr. TAYLOR—Yes, just as much as wet plates. You cannot expose a wet collodion plate, but you can expose it to a gentleman, and you can afterward expose the same plate and take a lady's portrait on it without replacing the film.

Mr. INGLIS—Mr. Taylor is perfectly correct. What I mean by that is, not in the general sense, but it can be done; not that it cannot be done at all. Undoubtedly the effect of the light can be taken from that—it can be used, but I do not think there is any one who wants to try that.

The *President*—I suppose that is what this gentleman refers to.

Mr. TAYLOR—Plate-makers would not advocate that.

Mr. MAWDSLEY—Is it worth while, when you know the potash will destroy the effect of light on the plate? I question whether it is practically worth while, inasmuch as the treatment afterward will be troublesome. Then, the sensitiveness is not repaired, at least in my experience.

Q. 8. What way is proper to cut up a sheet of albumen paper, say for cabinets, to print?

Mr. INGLIS—Cut it the size the paper wants to be cut, and get a cowhide mallet; give it a whack, and it will go through. The best thing I know of for cutting sheets, but perhaps I am mistaken; perhaps there is something better.

The *President*—Mr. Entrekin has got a machine in the exhibition devised for cutting paper like that.

Mr. INGLIS—I used something of this kind myself thirty years ago—a machine which I brought from Philadelphia, for which I paid $30—it was for cutting paper cards, which had to be done—and was used for many years afterward. Then I got some dies made, got the mallet, folded the paper, and in that way I cut the paper out, as many as I wanted. This was as perfect as anything could be. It is the cheapest; it is the quickest and best that possibly could be had, and the best kind of block to cut on that possibly can be had that I know of, but it wants to be frequently renewed. I used to use lignumvitæ, but it is altogether too hard. You can use it for a long time, but it will make your tools rust.

The *President*—I used to cut my paper in that way for many years.

Mr. INGLIS—Why did you give it up?

The *President*—My operator preferred to cut with the glass. I went back to the old way.

Q. 10. A dry plate ceases to be sensitive after developer is washed off. Please explain why.

Mr. INGLIS—I did not know that it did. Perhaps the party that gave that question can tell us whether it does or not. I am not aware of it. I just say this, that is important to be known: It is a mistake to think that it loses its sensitiveness when the developer is washed off. Let any one try it for themselves, and they will gain experience in that way, and they will find out that it don't become insensitive. Put the developer on, and if it starts into the light you will very soon see what kind of negative you have got. The negative may be taken to the light as soon as the developer is washed off, and it will not stain it. You can take it to the light and bring it back, but be careful not to allow the negative to see the white light until the thing is entirely fixed. Now, there is no necessity for that care whatever. You may take it into the light. I would not advise any one to hold it there in the white light for an hour or two, but to take it out and look at it; we can do that. I am speaking of what can be done practically, and in a practical way. It will not be fixed as if never taken to the light. That has been my experience. The plate has become too sensitive, inasmuch as it has been brought to the light. The party that asked that question thinks he has discovered that it has become insensitive, inasmuch as he brought it to the light; but he never tried to develop it afterward.

The *President*—I have tried it time and again, and brought the negatives out; and that was fully fixed. You could see they were not fixed out when I brought them out to a stronger light. I never let the strong light on to them; if I did I never could get rid of the stain. I have tried this a dozen times; I dare not bring the negative out without its being fully fixed; if I do I leave a stain on it. It will fix out; there will be a stain left.

Mr. INGLIS—Is it not well to discuss this matter? I will tell you how I conduct this process; it is according to the formula. I was told to be careful about the plate until it was entirely fixed, and keep the plate from the light just as much as I did before. However, when I began making plates, in testing one after I came to Rochester, I was in a hurry to see it, and after fixing it as I thought, I brought it out to examine it to see whether it was colored or not, and after taking it out of the dipping bath and putting it to the light, I was astonished; there was no sign of a line where it had been fixed before. I have done this hundreds and hundreds of times since, and I have never had any trouble, provided the developer first was washed out; that is, its action is entirely gone from the film before it is brought to the light. In further proof of that, let any one take a plate that has not been exposed, take the plate out of the little box and bring it out into the sunlight, then after that take and put it into the soda and fix it, and you will bring out clear glass.

The *President*—I have had that experience time and time again. Every time you bring the negative out to the strong light, before it is thoroughly fixed, it leaves a yellow stain, perfectly yellow, in that part.

Mr. F. B. ZAY, Findlay, Ohio—That is my experience exactly. I find that negatives exposed without washing before fixing turn of a brown color. I believe any one can verify that if they will make the experiment; that has been my experience. Where the plate is brought to the light there will be a change in the color; and I have had some good negatives change in that way.

The *President*—And the stain was in that part where it was unfixed?

Mr. ZAY—Yes, sir.

Mr. COLLINS—I had some plates that had the green fog on one end; one part was not fixed. I found that if I took those plates and carried them out to the light that those places were of a different color from the balance of the plate. You can see exactly on the print the line of demarkation between what is fixed and what is not fixed.

The *President*—What was the color?

Mr. COLLINS—The color of the negative was very intense, like that of a varnish.

The *President*—Yellowish brown?

Mr. COLLINS—It was a dark brown; it would make a good vignette in that way without any outside coloring.

The *President*—The natural consequence would be it would print solar if it was yellow there.

Mr. CLIFFORD—I have had some considerable experience in reference to this matter, and I have found flat stains. Take a large plate that is more or less convex at the corners, and it will ride up in the bath; it will come above the bath. I take it to be the air acting upon the film before it is fixed. The reason of this was that it was out of the hypo. This can be cured by putting in more hypo, but where it was uncovered in the air there would be a yellowish stain across the corner. I found this to be almost invariably so; in some cases you cannot do anything with the plate; in other cases you can take it out, and it comes out clear and bright. But if it has been standing where the plate is partly uncovered while it is fixing, it almost invariably shows these stains could not be got rid of even in the bleaching process.

The *President*—Put it back into the hypo; it will fix out further, but it will leave a yellow stain. That has been my experience.

Mr. CLIFFORD—That is my experience, and you may call it what you like.

Q. 12. Ruby light is injurious to the eyes. In what way is the visual organ affected?

Mr. MAWDSLEY—I don't find any injurious effect from the use of ruby light; but it is the going out into strong clear sunshine after being in the dark room.

The *President*—When you change from a white to a ruby everything looks blue.

Mr. COLLINS—My idea of that is, that going from a strong light into a dark room where you have a red light the eyes are strained, and in this way by the change of the amount of light received by the eyes the injury is occasioned.

Q. How can a dry plate be treated to last as long as a wet plate?

Mr. INGLIS—By using the method which has just been shown to us.

Q. 6. What causes the millions of little black specks in albumen paper after being silvered and dried?

Mr. COLLINS—I think the fumes of ammonia get on to the paper before it is dry.

A Member—Five years ago I had paper

covered with these little black spots. I had been hanging it in a large dry goods box that we had been previously using. I had been following the directions, and I found these black spots.

The *President*—Little specks of iron in the making of the paper will cause it.

Mr. HARDING—You can get the albumen paper full of black spots by silvering the paper too long.

Mr. INGLIS: Black specks and black spots are two different things altogether. The spots that would come from silvering are one thing and what is spoken of here is another.

The *President*—Black specks he speaks of.

Mr. INGLIS—That is what he speaks of—black specks; I would rather call them black specks or measly light. It produces a measliness in the paper.

Q. 7. What is the cause of vignette prints not toning around the edge of the vignetting? The picture looks all right in the center, but looks bricky as it blends away.

The *President*—The silver has not been sufficiently reduced.

Q. 2. Paper mottles if under-silvered; as soon as silvered, so as not to mottle, is full of black specks. What is the cause?

Mr. TAYLOR—I deny it.

Mr. INGLIS—It might be from fillings; it cannot be from over-silvering.

Q. 5. Are the deliquescent properties of some samples of sulphite of soda an indication of an impurity?

The *President*—I should think so, if it becomes deliquescent. Pure silver when exposed to the atmosphere becomes damaged in the same way.

Mr. SANDERS—I would like to have that question answered with reference to the vignetting.

Mr. MAWDSLEY: I refer to what I said in answering another question where the question was put with regard to removing the least trace of the nitrate of silver; I suggest we secure a better tone by not getting rid of all the silver, allowing the least trace of it to remain. I would say the want of toning around vignettes possibly might arise from that cause.

Mr. COLLINS—Mr. President, I have a man printing for me that is very careless, very dirty; he takes very little care of his silver solution. I was troubled with this yellowish dark color, and I inquired of him as to the strength of his silver, whether it was all right, and he said, "Yes, it is all right." I took and put in some ammonia and set it at the window, and there was about that much sediment (one inch) the next day in about a gallon of solution. I floated it out and I put in three or four ounces of silver and I did not have any more of it for a couple of weeks. The next time it came I did the same thing over again. I want to know what is the cause.

The *President*—It must have been the want of silver.

Mr. COLLINS—That cured it for me.

Q. Is it possible for photographers to make their own dry plates? A. Yes.

Q. What is the best way to make statue busts from life? No answer.

Q. What occasions blisters and what will cure them on brilliant albumen paper?

On motion, the Convention then adjourned until 8 o'clock in the evening.

◆◆◆

I AM much pleased with the new departure of the BULLETIN, with its beautiful letterpress, new dress and general get-up, as well as its contents.

I don't see how you can afford so much for so little.

Yours truly,
W. D. O'DONNELL,
Halifax.

WE are always pleased to have your journal in our studio; it is full of practical every-day information and sense. We anticipate a call from you twice a month—all right—come along—you are welcome.

BROCK & Co.,
Ontario.

Patents.

ENGLISH.

Specifications published.

424. Alexander Lamont Henderson, 49 King William street, London, "Improved method of and apparatus for coating glass or other plates, paper, cardboard, or other material with liquefied gelatine or other fluids particularly applicable for coating plates for use in photography."—Dated 12th January, 1885.

7,606. Duncan Campbell Dallas, 12 Crane Court, Fleet street, London, for "Improvements in obtaining printing and other surfaces."—Dated 6th February, 1885.

8,566. George Wilson Morgan, 5 Crimon Place, Aberdeen, Scotland, for "Mechanically shifting photographic backgrounds." —Dated 4th June, 1885.—*Provisional Specification.*

6,885. Thomas Furnival and George Daniels, Wellington Terrace, Reddish, near Stockport, Chester, for "Improvements in coating paper with thin layer of varnish, size, color, gum or like liquid material, and apparatus therefor."—Dated 23d January, 1885.

7,201. Thomas Samuels, Monkten Hadley, Middlesex, for "An improvement in photographic cameras."—Dated 3d May, 1884.

8,463. Samuel Dunseith McKellen, 18 Brown street, Manchester, Lancaster, for "Improvements in photographic cameras." —Dated 20th February, 1884.

8,721. William Samuel Atwood, 1 Lime Tree Villas, Chase Side, Southgate, Middlesex, and Samuel Benjamin Goslin, 27 Jewin Crescent, Cripplegate, London, for "Improvements in photographic cameras." —Dated 9th March, 1885.

8,771. Henry Joseph Shawcross, at the Office for Patents, 6 Lord street, Liverpool, Lancaster, for "Improvements in the manufacture and subsequent treatment of sensitive paper for copying drawings, documents written on one side, and the like, by photography."—Dated 10th June, 1884.

8,852. Frederick Woodward Branson, Leeds, York, for "Improvements in the means for uncapping and capping the lenses of photographic apparatus."—Dated 11th March, 1885.

5,134. Louis de Roux, of Begles, near Bordeaux, Department Gironde, France, for "Improvements in engraving by photography."—Dated 16th December, 1884.

5,647. James Thompson, 21 High Park street, Liverpool, Lancaster, for "Improvements in photographic camera stands for use out of doors on land or at sea." —Dated 27th December, 1884.

6,688. Samuel Dunseith McKellen, 18 Brown street, Manchester, Lancaster, for "An improvement in cameras for photographic purposes."—Dated 16th January, 1884.

10,558. Count Stanislas Julian d'Ostrorog, 5 Conduit street, New Bond street, Middlesex, for "Improvements in obtaining pictures on enamel fixed by fire."—Dated 2d December, 1884.

6,743. Norman Macbeth, of the Victoria Foundry, Bolton, Lancaster, for "Improvements in the production of printing surfaces by the aid of photo-reliefs." Dated 22d January, 1885.—*Complete Specification.*

6,898. Henry Joseph Redding, 48 Myddelton Square, London, E. C., for "An improved pocket ruby lantern for photographic purposes."—Dated 27th January, 1885. *Complete Specification.*

3,185. Alfred Julius Boult, 323 High Holborn, Middlesex, for "Improvements in apparatus for applying photographic emulsion to photographic plates." (A communication from Eli John Palmer, of Toronto, Canada, manufacturer.)—Dated 11th March, 1885.

3,778. Alexander Melville Clark, of the firm of A. M. & Wm. Clark, 53 Chancery Lane, Middiesex, for "Improvements in photographic paper and in sensitive emulsions therefor." (A communication from abroad by E. & H. T. Anthony & Co., New York, United States of America.)—Dated 25th March, 1885.

9,461. Alexander Melville Clark, of the firm of A. M. & Wm. Clark, 53 Chancery Lane, Middlesex, for "An improved panoramic photograph camera." (A communication from abroad by Paul Moessard, of Paris, France.)—Dated 26th of March, 1885.

9,612. Alfred George Brooks, 55 Chancery Lane, Middlesex, for "Improvements in the preparation or manufacture of photographic plates or surfaces for use in the production of etched or printing surfaces." —Dated 30th March, 1885.

10,334. James Sturrock, Bank street, Dundee, Forfarshire, N. B., for "Improvements in washing baths for photographic purposes."—Dated 30th January, 1885.

7,792. William Heath, 24 George street, Plymouth, for "An instantaneous shutter for use in obtaining photographic pictures." —Dated 16th May, 1884.

4,528. William Ford Stanley, 4 and 5 Great Turnstile, Holborn, Middlesex, for "Improvements in photographic cameras."—Dated 13th April, 1885.

14,457. Cleveland Green, of the Woodlands, Alveston, Stratford-on-Avon, Warwickshire, and Louis Varley Fuidge, of Ivy Cottage, Stratford-on-Avon, for "A new or improved actinometer."—Dated 1st November, 1884.

AMERICAN.

316,101. "Photographic posing support." O. C. White, Worcester, Mass. Filed July 19, 1884. Issued April 21, 1885.

316,647. "Photographic camera." H. V. Parsell and H. V. Parsell, Jr. Filed January 31, 1885. Issued April 28, 1885.

316,564. "Photographic shutter." C. C. Packard, Kalamazoo, Mich. Filed February 17, 1885. Issued April 28, 1885.

316,933. "Roller holder for photographic films." W. A. Bannister and L. H. Bannister, Rochester, N. Y. Filed October 13, 1884. Issued May 5, 1885.

317,049. "Roller holder for photographic films." W. H. Walker and Geo. Eastman, Rochester, N. Y. Filed August 8, 1884. Issued May 5, 1885.

317,050. "Roller holder for photographic films." W. H. Walker and Geo. Eastman, Rochester, N. Y. Filed December 12, 1884. Issued May 5, 1885.

316,950. "Photographic film holder." Geo. Eastman and W. H. Walker. Filed August 8, 1884. Issued May 5, 1885.

317,788. "Combined shutter and diaphragm for photographic cameras." De W. C. Hoover, Buffalo, N. Y. Filed June 12, 1884. Issued May 12, 1885.

317,915. "Attachment for photographic cameras." Lewis T. Young, Philadelphia, Pa. Filed May 28, 1883. Issued May 12, 1885.

318,302. "Stereoscope." Gustav Schneck, Jersey City, N. J. Filed December 6, 1884. Issued May 19, 1885.

319,663. "Apparatus for instantaneous photography." A. S. Barker, Clifton, Pa. Filed September 6, 1884. Issued June 9, 1885.

319,669. "Photographic apparatus." J. K. Beach, New Haven, Conn. Filed May 5, 1884. Issued June 9, 1885.

GERMAN.

Applications.

XV. M 3,629. "Improvements in the production of printing surfaces with the aid of photo reliefs." Norman Macbeth, in Bolton, County Lancaster, England. Representative in Berlin, C. Rob. Walter.

LVII. C 1,618. "Improvements in photo apparatus." Henry Correja, in Paris. Representative in Berlin, F. C. Glaser.

LVII. B 5,544. "Improvement in a photographic camera." Geo. Braun, in Berlin.

Patents granted.

"Improvement in the photographic camera." Ernst Martini, of the firm of I. F. Schippany & Co., in Berlin. Patented in the German Empire, June 20, 1884.

The patent claim is:

1. The hollow cover, which hides ground glass and plate-holder before and during exposure.

2. The box, which keeps the plate-holder during exposure in the dark, preventing the penetration of light to the slide, and in which is the plate-holder regulator, provided with a hook in its width, and the bar moving this regulator.

3. The plate-holder into which the plate is inserted from the side, and whose two sides can be pulled out from opposite directions.

"Camera with removable lens." Thos. Samuels, in Monkten Hadley, Middlesex, England. Patented in German Empire, September 9, 1884. D. R. P. 31,170.

The invention consists in the arrangement of a photograpic camera, by which not only the removable front board, effecting generally the horizontal and vertical change of the lens, can be replaced, but also the movable back part, which turns around a horizontal axis.

By combining the removable front board with the turning back part of the cameras now generally used, the exact focus is obtained upon the ground glass. The object of the invention is to obtain the same result by such a manner of fastening the lens to the wood-work that it can be turned around the horizontal and vertical axis, and can be adjusted in both directions. The front plate of the cone-shaped bellows is only as large as necessary to fasten the lens to same. But the front plate holding the lens is not, as ordinarily, solidly connected with the bed carrying the camera, or so that it can be changed only the length of the bellows, by way of the bed frame, to get the focus, but this front board can be turned around the horizontal as well as the vertical axis in any direction, the flexibility of the bellows admitting to focus in any direction without difficulty.

Patent claim:

On a camera with bellows, the hoop serving as carrier for the lens, with slit and clamp screw, which latter fastens the hoop on the bed, forming a vertical axis for the lens, admitting a removal of the lens in any desired direction.

Views Caught with the Drop Shutter.

Albany, July 28.

The George H. Ripley Company, of New York City, has been incorporated at the capital, with George H. Ripley and Robert A. C. Smith, of Brooklyn, and Henry G. Runkle, of Plainfield, N. J., as incorporators. Its objects are the manufacture and sale of photographic dry plates and other photographic specialties. Capital stock, $5,000, divided into 200 shares of $25 each.

The second annual field day of the Rochester Photographic Association took place on Friday, July 31. The rendezvous was at Palmyra, on the N. Y. C. R. R., and the tour eastward.

Mr. Tabor, of San Francisco, Cal., called on us the other day, but he was in such a hurry we hardly had time to say "boo" to him. He looks well and energetic.

Mr. E. O. Zimmerman, of St. Paul, Minn., was in to see us a few days ago.

Our Mr. George Ayres, Mr. J. C. Somerville, Mr. Guerin and Mr. G. Cramer and family are at Nantucket, where they are taking a well-earned rest from their Buffalo labors. They gave us a call *en route*.

Mr. L. W. Seavey was here the other day, and left us for the Thousand Islands, where he met with the Canoe Association, of which he is an enthusiastic member.

Sheen & Simpkinson, of Cincinnati, also Mr. Edward Wuestner, of the St. Louis Dry Plate Company, and Mr. Cudlip, of Washington, spent some time with us a few days ago, looking up eastern novelties.

Mr. R. B. Mullett, of Mullett Bros., of Kansas City, has been east for some weeks, and we have had several pleasant visits from him.

Mr. F. A. Bowman, of New Haven, Conn., also gave us a call, and looked around at the new developments in the art.

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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

ANTHONY'S
Photographic Bulletin.
PUBLISHED SEMI-MONTHLY,
Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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Vol. XVI. SATURDAY, AUGUST 22, 1885. No. 16.

THE EXHIBITION OF PICTURES AT BUFFALO.

In forming a judgment of such a varied collection of subjects, a great difficulty is encountered in making comparisons. The portrait, the group, the landscape, the marine view and the composite picture were all represented at Buffalo; and, to do justice to all, requires that the critic shall know the difficulties to be overcome in each case to secure the results presented. Now, since we do not claim to be such a universal genius, we can do little more than chronicle the names of the exhibitors, and give such of our impressions as were received during our survey of the large collection seen in the building of the State Arsenal. Thousands of square feet of wall space were covered with the finest specimens of photographic art in America. The very arrangement and setting of the pictures were in most cases very artistic and show that photographers very well deserve the name of artists.

Much has been said in the newspapers, from time to time, about photography not being an art. Now, this is the most utter nonsense; and the cry is only raised by those who are jealous of its advances. That all photographers are artists, we do not claim; but neither are all painters and draughtsmen artists. There is a vast difference between the designer of an advertising sign and the celebrated Turner, yet each uses the materials and methods of art. The same is true of photographers; Mr. Ryder, with fine feeling and delicate taste in every picture that he makes, is an immense distance ahead of the mere picture maker who travels through the country villages, earning a paltry pittance; nevertheless they both use the same silver haloids and the camera and lens.

What then makes the difference? It is simply this: One has the feeling, the spirit of the artist; the other has not. One makes pictures for the sake of their beauty; the other, for gain alone. There is no doubt whatever that photographic art brings its reward in time, and that photography without art is but a handicraft crowded with sharp competitors. The photographic artist should rank with the painter in pigments; and when the time comes that we take photographs in natural colors, we can challenge the painter to compete with us, for at the present time we outstrip him in the delineation of form or figure.

But it is scarcely worth while to champion the claims of photography as an art; such a fact is becoming more and more recognized every day.

Painters are using it as a means to hold more truly "the mirror up to nature," and we only regret that they do not more openly acknowledge the inestimable service that it renders them.

Many artists sneer at photography, and say they only use it to obtain outlines. Yet these very outlines make their work more faithful and true; and the fact of their acknowledging even this much exhibits their inability to produce the same results by hand, no matter how cunningly trained.

We have somewhat run away from our pictures at Buffalo, but we were led to do so from a contemplation of the truly beautiful work we saw there. Now to return.

It has been well said by the poet:

> "Order is heaven's first law, and, that confessed,
> Some are, and must be, greater than the rest."

And this is the idea that was forced upon us in viewing this exhibition. Therefore we shall not take up the pictures according to their merits, but as they were arranged in the Hall, and can only notice the more prominent collections. (See Report of Executive Committee in next issue of the BULLETIN.)

Turning to the right as we enter, the first space allotted to pictures was occupied by Hardy, of Boston. Here was found as fine portrait work as was to be seen; good lighting, graceful posing and uncommonly sharp and brilliant effects stamp the work as that of a master hand.

Gubelmann, of New York, exhibited some of his remarkable instantaneous pictures of shipping, etc. The readers of the BULLETIN are already acquainted with this work from the illustration we gave of it last year. He certainly stands second to none in this line, and his effects are often exceedingly artistic.

The next important exhibit was from Mr. G. M. Carlisle, of Providence, R.I., the treasurer-elect of the Photographic Association of America. Here we found the work of the artist and also his feeling. Almost every picture showed that something more than a portrait was aimed at; and the group illustrating the verses of James Russell Lowell on "Yussouf" was uncommonly good, and attracted a great deal of attention.

Dressel, of Buffalo, showed a number of landscapes and groups that were fine work. We noted one interior that was particularly good.

J. M. Brainard, of Rome, N. Y., showed cabinets and large heads, the cabinet pictures carrying off the Anthony second prize, given for pictures made on the Stanley plate and N. P. A. paper.

H. McMichael, of Buffalo, the secretary-elect of the P. A. of A., had a truly handsome exhibit. He carried off the first Anthony prize for his large heads. The whole collection was fine and well arranged, the artist work in the portraits being of a very pleasing character. The best portrait there was a life-size head of our friend Mr. J. F. Ryder, of Cleveland, and this was truly lifelike; made in five seconds.

Sarony, of New York, had two large frames of his well-known artistic work. These were tastefully exhibited and the pictures good. Indeed, we need scarcely say that his work is equaled by few and excelled by none.

Parkinson, of New York, showed a fine life-size head of our Col. V. M. Wilcox. We do not want to flatter the Colonel, but it was a very handsome portrait, both in subject and execution of the photographic work.

Quite a large collection of pictures was exhibited by R. G. Gardner, of Kansas City. Some of the pictures of machinery were uncommonly good. The large portraits and cabinets were of a high order; so also were the portraits of children, of which there was a goodly number.

Armstrong, of Milwaukee, showed a large number of views around his city. Most of these were gems of landscape work, and the choice of subject was in all cases artistic.

J. F. Ryder, of Cleveland, Ohio, had undoubtedly the best general collection in the whole exhibition. This statement comprehends the whole exhibit, arrangement, frames, pictures and all. The moving spirit of the whole has undoubted artistic feeling, and everything in the collection bore the impression of this feeling. That the collection should have taken the gold medal awarded by *The Eye* was no surprise to us. Indeed, we should have doubted the good taste of the members had it been otherwise. This medal was awarded for the best collection of pictures exhibited at Buffalo, and this award was determined by the votes of the members present. As our reports will show, Mr. Ryder obtained by far the largest number of votes, and therefore justly received the prize. Our first look over the collection impressed us with the fact that Mr. Ryder's exhibit contained more good pictures than any other, and we were naturally pleased when the verdict of the majority confirmed our impressions. We wish we could have shown this collection to some of our artist friends, and then have asked them what was lacking to make the genius that produced them an artist. We are satisfied they would have had little to say. In the collection were a number of large pictures, beautifully framed to suit the subjects, and among these were more fine portraits than in any other collection exhibited. They were unquestionably the best taken altogether. There were also a number of large landscape views that were truly beautiful, the points of view chosen showing the feeling of the landscape painter. Our only regret is that we cannot find space to tell all the enjoyment we obtained in looking at these pictures many times.

We must stop here and continue our impressions in the next issue.

◆

In the last issue of the Bulletin, in our notice of the medal awarded to Mr. Ryder, we find that the printer transposed the words of the Latin sentence. It should read

Palmam qui meruit ferat.

Our publishers took considerable trouble to obtain a very handsome collection of pictures from Germany for exhibition at Buffalo; but, unfortunately, they arrived after the convention had adjourned. They certainly would have equaled, if they did not surpass, any of the foreign pictures shown, had they arrived in time.

Much credit is due to Mr. C. Gentilé, of the *Photographic Eye*, of Chicago, for inaugurating the giving of medals for exhibits of pictures at the meeting of the Photographers' Association of America. The medals to be awarded next year will bring forth such an array of works of art that all previous efforts will sink into insignificance.

Owing to pressure upon our thoughts during the preparations for the convention at Buffalo, and also since our return, we have forgotten to acknowledge a very kindly act on the part of Mrs. Fitzgibbons Clark, of the *St. Louis Photographer*. Just before the issue of the Bulletin preceding the convention, this good lady sent us a telegram announcing a change in the railroad rates to Buffalo, which we received just in time to alter the figures in the last proof-sheets We acknowledge our guilt in not giving the credit at the time; but, as an excuse, we must remind the lady that we are mortal and therefore liable to forget. We now return her our best thanks for the courtesy.

SOME SENTIMENT ABOUT A DETECTIVE CAMERA.

BY EDWARD L. WILSON, PH. D.

It was on a bright May day, at the New Orleans Exposition. I was awfully worn with my work, and as was my frequent habit, just for a rest, I took up the cunning little Anthony's Detective Camera which always sat upon my desk when not in use and went out into the park for some sport.

I had a favorite hiding place, underneath one of the grand old live oaks, where, at the junction of the carriage road and the walk which ran from the Art Hall to the Horticultural Hall, I could "detect" all sorts of subjects from a mule team to the infinitely more obdurate combination—a twain of Creole lovers.

After seating myself for the work, I would un-hide my little companion, place it in order, fix the shutter, pull out the slide, and then, to keep it in good temper while some one or something was coming, would hum a verse of a Creole song to it which begins perhaps thusly:

"Si to te 'tit zozo,
Et moi-meme mo te fusil;
Mo sre tchone toi—*Boum!*"

If thou wert a little bird,
And I were a little gun,
I would shoot thee—*bang!*

Oh! dear little
Mahogany jewel.
I love thee as a little pig loves the mud.

And by that time, as I watched the finder, I would begin to see the pigmies coming. Is it not just marvelous to see such *mites* of humanity moving about so spry, and *all so sharp?*

Ah! there come my victims! I have caught you at last, my Creole friends! The old folks are at the springs and you are having a slight *seance* under an umbrella, none too large for you both. I "detect" you ere you are a quarter of an inch in size. You would not feel even *that* high if you knew *I* saw you. But I am going to let you go by me while I—click! There, after all, in my nervousness I pushed the spring and I have shot them—in the back.

"They were so one that none could truly say
Which of them ruled, or whether did obey."

Apparently

"*He* ruled, because she would obey; and she,
In so obeying, ruled as well as he!"

The plate happened to develop a most interesting and affectionate scene, and—I sent a copy to the gentleman.

It brought him to my office in a few hours.

"Way you gid dad?" he said angrily, holding the carte up before me.

"From memory," I said.

"Wad you wond for tage id?"

"It was an accident," I answered.

"You ave my ca-ad?"

"No, I do not want you kyard. I am not much on a duel. This was the joker who caught you, not I," I asserted, and then showed him how to "detect."

"'Tis a good idy," he said, and seemed to grow cooler.

Neither of us spoke for a moment, and then he said: "I kin mague you de troub' to kib dad cliche? Fo' me—fo' mad—ame?"

I answered that I quickly would.

"Oh! I tek you' word fo' hall dad. It mague me ver 'appy."

It was all I could do to keep the warm-hearted fellow from insisting on having divine service and a thankgiving dinner at his Esplanade street home in honor of his having been caught so cleverly with "zot amusing detektif *mash*-een."

You would tire if I told you how through the summer whole military companies were flanked, thieves caught, crowds arrested, living animals taken in, and what not of interesting subjects made mine by this effective detective objective.

If you had a hundred other cameras you should have one of these too. There is more fun to the square inch to be had with it than anything I know, and *that* part of my story, at least, is the real, properly exposed and thoroughly developed truth, and *not* sentiment, though it is *all true.*

Dr. Wilson inclosed with this article a proof from the negative he obtained with the Detective Camera; it is certainly life-like.

◆

THE HANDLING AND DEVELOPMENT OF DRY PLATES.

By W. H. Potter, Indianapolis, Ind.

[Read before the Photographers' Association of America.]

The subject will be briefly treated of under three heads, the man, the light and the development.

And first, in regard to the man thought qualified to go through successfully with the various manipulations connected with the production of gelatine negatives. The critical dicta that "any one can make dry plates, but it takes a genius to develop them," or that "one science only will one genius fit, so vast is art, so narrow is human wit," are rather sweeping to apply to development, which is only a branch of a science; but still the higher the mental training, and the more perfect the command of all the faculties, the greater will be the success of our man.

But no great thing is achieved in a rush; there is a great deal of preparation, a succession of events, preceding a crisis or a great achievement; so the guiding hand and the governing will, to be successful, must be disciplined by previous habits and modes of action. One must be ready for the decisive moment wherein the fit achieve success, the unfit suffer defeat. In the tide of one's affairs, how can he take it at the flood if he has neglected his schooling in the methods which guarantee success? The appearance of the beggar on horseback is not so much against him as is the pinched-up soul within which makes him unequal to the situation.

One's battle is mainly with himself; he stands alone in judgment; therefore he should not waste his time vilifying his neighbors, but bend every effort and seize every opportunity for his own improvement and that of his productions. He should also remember that low grasping ultimately defeats itself and that those who labor solely for low material interests seldom receive the prize. Neither will he delight in stained hands, besmeared clothes and disheveled hair; nor will he rush hither and thither hoping thereby to convey the ideal of a devising business and of his own self-importance; nor any other kind of clap-trap or pretense, for this is the way of the unfit, and they cut a sorry figure in the eyes of the judicious.

> "Oh, wad the powers the giftie gie us,
> To see ourselves as others see us."

But can every conscientious, energetic photographer become master of dry plate manipulation, or is it attainable only to the few?

Gifts to men have been distributed as bountifully as light and air, but unfortunately the many neglect their talents and opportunities, the few only make the most of them; these are sought after, those are neglected. It rests with each individual what shall be the measure of his success, as the gods help them that help themselves. What a man ardently desires and strives after, that shall he accomplish. The difference in men's talents is not so great as is their persistent determination, and this is susceptible of cultivation.

That a man's judgment and knowledge determine the quality of his negatives is sufficiently demonstrated by the knowledge that his negatives differ from every other man's, although made from the same emulsion and developed with the same kind of developer. His every faculty enters into his conception of what a negative should be. Then, is he governed by crude notions or guided by thorough theoretical and practical knowledge? The value of his opinions or productions can be measured by the answer to this.

Therefore, get understanding, get wisdom; great is the value of it. Have faith, have hope, have determination; no great poet sings and no great master paints without these. In fact, a certain amount of sentiment and enthusiasm, and even a little fanaticism, seem necessary to any great achievement in any one direction.

THE LIGHT.

In the attainment of perfect chemical results the management of the light is of supreme importance. It matters not how perfect the plates, the lens or the development may be, if the lighting is defective, the result will not be a first-class negative; for in such cases, with the best materials, only a map representation can be obtained.

In portraiture, should one so light the face as to have crescents in the eyes, with possibly stars in the pupils for high lights, perfect modeling or definition is out of the question, because the same flood of light which has made a caricature of the eyes has utterly obliterated the delicate curves about the most important features of the face.

This criticism is made because too many photographs, even to this day, have these defects, and judging from these, too many what are considered first-class galleries use the same quantity of light for dry plates that was found absolutely necessary for the wet. This charge lies mainly against those who, having clung to wet plates till they were compelled by the force of circumstances to use the dry, have gone off on a tangent trying to make all sorts of difficult positions without head rests, and to achieve this, flood the subject with so much light as to sacrifice definition to effect.

But it is now possible without risk of the subject moving or of overstrain to model up the subject with light somewhat as a painter or sculptor would under similar conditions. This can readily be accomplished if the light is brought under absolute control by properly curtaining the skylight. For a twelve-foot light there should be at least two curtains for the sidelight and two restrictively fastened at the top and bottom of the top light.

With such an arrangement the light may be so adjusted as to bring the high lights in the eyes to a mere point, and if at the proper angle, the whole face will be so lighted as to give good modeling and, with proper timing, good definition.

Under such conditions the pupils will not contract, nor will the subject frown. But what light you have, have it clear and brilliant, as it is folly to talk of brilliant chemical effects without a brilliant light. Proper or full timing will give all the softness required. Use rapid plates and light boldly for relief and brilliancy. Slow plates demand too much light or too prolonged timing to get the best results as to either definition or expression.

In regard to the exposure, the only safe criterion is the relative brilliancy of the images on the ground glass; and one should school himself to judge critically of the brightness and color of the image; decide that this subject requires so many seconds, that, so many more or less.

Rely on and cultivate your judgment; there is great demand for it in lighting, posing, etc. If one cannot put confidence in himself, who should?

THE DEVELOPMENT.

This shall be confined to my present methods of procedure and stated as concisely as possible.

Two kinds of development are in use:

The Ammonia Pyro.

Sulphite of Soda (cryst.)	6 oz.
Bro. of Ammonium	1½ oz.
Bro. of Potas	2 oz.
Pyro	4½ oz. avoir.

Dissolve thoroughly and add sulphuric acid, 240 minims, and liquid ammonia, 6 oz., and enough water to make 80 oz. solution.

Use 8 drs. of this stock solution, and from 8 to 11 oz. water.

The Soda Pyro Developer.

A. The Pyro Portion.

Water	96 oz.
Acid	96 grains dissolv.
Alcohol	6 drs.
Pyro	16 oz.

B. Soda Portion.

Water	120 oz.
Carb. Soda	10 oz.
Sulphite Soda, gran.	10 oz.

Use 1½ to 4 drs. of the pyro solution, 8 of the soda and 7 oz. water.

The am. pyro and the pyro portion of the soda developer are kept in six-oz. bottles and will keep indefinitely.

Ordinarily the developers are mixed as follows: 3 drs. of pyro solution, 8 drs. soda and 7 oz. water; the am. pyro, 8 drs. and 8 oz. water.

Two trays are used in developing the smaller sizes, partly for expedition and partly because slight modifications may be made quickly in the mode of development.

The timing is judged to be absolutely right, but if a little short the soda developer is poured into the tray, and the plate placed in it. Should development progress too rapidly, place the negative in the tray into which some am. pyro has been poured. Should the timing be considered a little full, start with am. pyro first.

If the exposure be first rate, the am. pyro brings up the image almost as rapidly as in wet plate development, and the negative has a light straw color bloom, with excellent printing qualities.

Should its exposure be much too short it gives too much color and contrast. In such cases the soda developer is far superior; with the two developers combined in various proportions, many modifications may be made.

There is a peculiar relief or atmosphere effect given to the negative, which is distinguishable from that of either alone.

In developing 18x22 or 20x24 plates the ordinary method is modified in the following manner: in the 16-oz. bottle is mixed 3 or 4 drams of the pyro solution, 2 oz. soda solution, and the bottle filled with water; into another 8-oz. bottle is poured 3 drams pyro solution, 1 oz. soda solution, and fill with water; into another 8-oz. bottle, 1 oz. am. pyro, and the bottle filled with water. The developing tray is partly filled with water and the plate placed in it, and allowed to soak a few moments or till the water will run off without a ridging, when it is quickly poured off and the developer in the 16-oz. bottle is dashed on, and the tray rocked to secure even development.

Should the exposure prove short, this developer of weakened pyro will save it; or the exposure proving about right, pour in it 8 oz. of normal soda solution; or if full exposure is indicated, use instead the 8 oz. am. pyro solution, which will check rapid development, and give intensity without making a slow printing negative.

It has been noticed in the development of large plates, when the developer is any way near the right power or strength, the image will come up quite rapidly at first, but will soon check up and proceed quite leisurely, and the mode of procedure prove just right.

But if the shadows come up too much before the checking of it begins, without the addition of more developer stronger in pyro, the negative will have to be over-developed to get printing strength; or if the stronger pyro solution be added when really it is not needed, the negative will then have too much contrast, and if not speedily checked too much intensity also. It takes an exceedingly quick apprehension to realize, in time to correct a mistake made in the commencement of development, what modifications are necessary to redeem the negative.

It is simply impossible in all cases to begin development just right. Ample preparation should be made for all contingencies, as one should not rely too much upon his wit to help him out of a tight box, and yet his mother wit may be the ultimate theory in the redemption of an otherwise hopeless situation. The great thing is the ability to comprehend the situation in each particular case, the readiness to make possible modifications and the grit and alertness to make them in time. It takes a brave man to avoid getting rattled and winding up with a negative too thin, too intense, or with too much contrast.

We will close with an answer to the question, "Does rocking the plate during development secure contrast?"

That evenness and cleanness are obtained by it is not questioned; so directly to the answer. The molecules of bromide of silver disturbed or changed, by a proper exposure from the highest light to the deepest shadow, are in progressive diminution. All, or nearly all, of the bromide of silver on or near the surface of that portion of the plate which represents the highest light is changed, while but a small amount is affected in the deepest shadows.

These mechanical agitations of the developer cause a rapid chemical action, so that before the developer has had time to penetrate the film to any considerable extent the reduction in high lights has been carried to a much farther point than it otherwise would had the developer remained quiescent. The start the high light has secured over the shadows is maintained throughout ordinary development; also, the shadows requiring all, or nearly all, the changed silver both in and on the surface of the film, to give proper definition, the high lights have time to darken sufficiently to produce proper contrasts.

But there is still another factor contributed to the same result. The greater amount of free bromine thrown off in the high lights, and combining with the quiescent developer lying immediately over the high lights, retards development in the lights, which, in the shadows, the developer being less retarded from this cause, progresses too rapidly to secure contrasts; but by agitation the power of the developer is kept uniform over the surface of the plates, and the high lights retain all other advantage secured in the exposure.

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A PORTABLE SUPPORT FOR WASHING GELATINE PLATES.

By W. M. Ashman, London, England.

[Read by J. Traill Taylor before the Photographers' Association of America.]

An invitation to communicate anything upon such an important occasion as the present is an honor which has given me great pleasure, mingled with anxiety lest the subject which might appear to me to be fitting should prove to be identical with that chosen by one of yourselves, whom we who have the opportunity of being posted up in American photographic literature know to be thoroughly practical. In fact, so much are some of us impressed with this idea, that it appears questionable whether we can indicate anything of practical value which possesses the merest flavor of novelty about it, when it reaches the hall of your great convention.

If, therefore, as I honestly suspect, that I too have failed in this particular, it has doubtless been done in good company. Be this as it may, while in the dilemma just mentioned, my eyes rested upon some negatives from which the fixing salt was rapidly passing away, and it occurred to me that a portable support would, at all events, be something to make and mail in time for the meeting. It was thereupon settled, and I have asked our mutual and highly respected friend, Mr. J. Traill Taylor, to introduce the result to your notice, with these few accompanying remarks.

A detailed description is hardly necessary, as Mr. Taylor will place before you the first and only frame that I know of, so that it will be sufficient to merely refer to its use from a theoretical as well as a practical point of view.

Starting, then, with a plate fresh from the fixing bath, we have a skin of gelatine swelled to its full extent with an aqueous solution of sodium thiosulphate and possibly plus a portion of the double silver and sodium thiosulphate salt. The former we know to be soluble in water, and the latter is only soluble in an excess of the first named. For this reason it is customary for us to allow our negatives to remain a longer time in the fixing bath than is necessary to dissolve out the visible silver bromide.

From this skin we desire to remove all traces of the fixing salt, leaving it swelled with water or other suitable liquid, free from chemical contaminations of a harmful nature. The question then arises, which is the easiest and at the same time the most expeditious method of bringing this state of things about. Obviously the plan of placing a negative film uppermost at the bottom of a vessel of water has little to recommend it, for, as everybody knows, a stagnant pool is not the best place to cleanse anything. Another plan, that of passing a stream of water over the surface, possesses advantages, as we know, over the last named, but the stream needs to run a long time before there would be a sufficient dilution to permit complete removal of the salts from the under surface.

Soaking plates in vessels fitted with vertical grooves is an improvement upon the foregoing, but the plan, although in general use in Europe, does not reach theoretical perfection; neither can a greater number of plates be washed in the same space than by the method I desire to bring under your notice.

All fixing salt eliminators, except alcohol and water, have a destructive influence upon gelatine, which renders their employment a matter of some delicacy, and unfit for general commercial application. Therefore, unless we discover some other specific, we must be satisfied to employ dilute alcohol or water for the purpose; of the two the latter is preferable, and until some one proves to the contrary, I take it that a method of supporting films horizontally in contact with a body of water in gentle motion is as nearly correct in theory as we can get at it. The accompanying frame, which may be as easily carried as a cabinet photograph, will, when extended and fixed, support six half-plate negatives (English size), and can be made by any one in a few minutes. The films are placed downward and are not likely to get damaged, because the sharp edges of the glass plate are in contact with and wedged between the three supporting pillars, and may with safety be placed in a running stream of water until it is considered the negatives have had sufficient washing, when the frame can be placed in a current of air and the negatives will dry without dust settling upon the surfaces.

It is convenient when traveling to have zinc tanks large enough to take one or more frames of this kind, and they might be made in the form of packing cases, utilizable for the protection of lenses, bottles, etc.

If a metal exit tube is soldered in the base, or perforations made in the lower corners, so that a constant downward withdrawal of liquid occurs, the same being replaced from a faucet, about sixty minutes of such treatment would be found sufficient to effectually wash a thickly coated gelatine plate.

Very little consideration will show that any soluble matter a negative may contain, such at all events as we are accustomed to deal with, must by the natural law of gravity pass through the gelatine into the water below, converting the film as it were into a kind of septum, and thus practically washing by dialysis.

In every-day practice I employ similar frames of rigid construction, but the example sent herewith represents the idea in a convenient form, which may be appreciated by the touring photographer and the holiday maker.

THE BACKGROUND, ITS USE AND ABUSE.

By G. M. Carlisle, Providence, R. I.

[Paper read before the Photographers' Association of America.]

That the background should be subordinate to the figure, I have no need to announce.

This truism has been so oft repeated that the veriest tyro must be aware of its importance; yet we see every day the effects of miserable carelessness in the use of both interior and exterior backgrounds.

If one has not the time or inclination to exercise proper care in adapting effective grounds to his model, it were better he have none. A plain ground, shaded gradually from dark upon the one edge to light upon the opposite edge, and so placed behind the model as to bring the face in proper relief by placing the dark portion of the ground opposite the lighted side of the face, never fails to fulfill its mission, and is easy of management; while the elaborately painted ground, unless carefully managed, destroys all harmony and exposes ignorance of rules of composition or carelessness of treatment.

How often we see prints from negatives beautifully lighted, skillfully finished and properly printed, yet the outline of the face so identified with the ground as to be entirely lost. This is so common an error that there are few photographers in the profession who do not every month in the year send forth to the public this glaring evidence—not of their ignorance, but of their carelessness in the use of backgrounds.

Should we have frequently by discerning patrons finished pictures turned back upon our hands for this inexcusable fault, we would by this, having our attention called to the matter in a way to touch our purses, be benefited by the loss. I am aware that photographers of experience, possessing a practical knowledge, would scarcely need to be told that a contrast between the outline of face or figure and the background is absolutely necessary, yet a reminder of this important fact cannot be out of place when we see so frequently evidence of a neglect on the part of even veterans who fail to put in practice what their experience must surely have taught them, but frequently allow glaring errors to creep into work that would be condemned very readily by themselves if seen in the establishment of another.

There was recently brought to me a photograph to be copied, which was fully up to the average in all particulars save one. A landscape ground had been employed, while the subject, a child, was posed upon a carpeted floor, reclining against an upholstered chair. By converting the chair into a rock and the tapestry carpet into a grassy bank, we were enabled to stop a lake from flowing into the foreground, of which there seemed great danger in the original, to the destruction of both life and property. That a man capable of making any kind of photograph should use a landscape ground in connection with a carpet seems strange indeed.

Another glaring error too often seen in otherwise good photography is a contradiction of lighting—the model lighted from the left while the design of ground is lighted from the right, and *vice versa*.

During the first years of my experience with the camera—1857—it was impossible to obtain painted by order or in the market as merchandise a practical or useful background; but to-day we are favored with a variety that leaves nothing to be desired, and no excuse can be made for not possessing and properly using as an auxiliary the backgrounds best adapted to your light and requirements.

In selecting a ground one too pronounced should not be chosen. Many have an impression that a ground, however sharply painted, will be all right if removed far enough back to be out of focus. Such is not the fact. Experience has shown that a ground properly painted should have no hard or decided lines, but should be merely suggestive, with a penumbra to all lines and figures, which should always be in proportion to what the model must necessarily be on a given size mount.

Careful attention to line of horizon should be exercised in selecting backgrounds, a large per cent. of which have their line of horizon too high, which should not be more than one-fourth the distance from the floor to top of painting. Figures are frequently photographed larger than they should be when placed in front of landscape grounds or interior designs.

A lady taller than a church spire or tree is never seen, except in a lying photograph.

Imagine a gentleman photographed standing near an open door or arch, and his figure represented several feet higher than the door. We have all seen this error in photography. Should it not be avoided? I once saw a photograph of a lady representing her as walking by the sea side, a full-rigged ship so painted in the background as to be in danger of tearing away the lady's back hair, and this in that "Athens of America"—cultured Boston. Thus the most ridiculous things do we sometimes witness in photography.

Injustice is frequently done the photograph or negative in printing. A portrait printed from a negative with a ground so dark as to show a marked halo in a vignette with defined edge is, to say the least, in bad taste. The gradation of a vignette, whatever the shade of ground, should never indicate the means adopted to produce the result. So far should the mask be raised from the negative that no imprint of its shape or design is visible in the print. Therefore a ground too dark should not be chosen for negatives that are to be vignetted by any process of photographic printing yet invented. Tropical plants, Italian sunsets, or gorgeous flowers are all very well, but a portrait of a lady dressed in furs surrounded by such accessories can hardly be declared apropos. The photographer who is guilty of such an application of backgrounds can possess but little art feeling, and a less knowledge of the eternal fitness of things in general. To those never guilty of such oversight this charge cannot apply; but should there be any present who have not hitherto given the background proper and careful consideration, I would urge upon them the importance of so doing at once.

There are not so many who have written their names in letters of gold upon the scroll of fame but that there is yet room for your name beside them. Photography in all its branches requires great care and watchfulness, but in no department is better judgment required than in the adaptation of surroundings to the model or subject to be photographed. The general public are becoming educated up to this important feature of photography fully as rapidly as we the photographers are.

Bear in mind that the portrait of an humble hod-carrier may fall into the hands of those whose good opinion of your work it is desirable you should obtain. Eternal vigilance is, therefore, the price of success in this as well as any other business, and so long as you make good use of your eyes, hands, and the mental faculties God has given you, they will minister unto your necessities, provided, however, you have the courage to charge a fair and adequate fee for your time and skill, as do men of other professions.

No business man with an eye single to his own interests will fail to note the signs of the period. If the public become accustomed to pictorial effect in photography they must be indulged; therefore possess yourself of a variety of grounds, but exercise the most judicious care in their use.

Sir Joshua Reynolds has been charged with laying down in his writings various radical rules which he never employed in his own practice. If the greatest master of the English school of painting did not always practice what he preached, I conclude I may be excused for referring to defects that may be found in my own productions.

An enterprising photographer of Providence has this season opened an Equine Photograph Establishment. Here the painted background plays an important part. In an open and spacious yard, under a canvas canopy, backgrounds are arranged 40 feet long. Here horses harnessed to all manner of vehicles await their turn to be photographed, and their owners appear to be as much interested in securing their portraits as does the anxious mother for her darling child. Here, then, is a pointer; any large city will support its equine photograph establishment, properly conducted and equipped with appropriate backgrounds.

That something handsome can be realized from this scheme by attending State fairs I have no doubt.

At very small expense posts may be put up for a canopy and backgrounds, which will at once attract attention and profitable orders.

That some one may profit by this suggestion is the sincere desire of the author.

THE INTERNATIONAL EXCHANGE.

To the Editors of the BULLETIN:

HAVING effected arrangements abroad, through Mr. Henry Smith, of London, for the exchange, semi-annually, of small-sized negatives or positives of interesting pictures to be taken during the present season, I desire to secure the active co-operation of all interested amateurs, either in this country or Canada, who may wish to become identified with the scheme.

The object of the exchange will be to promote the distribution, transportation and exchange of transparencies and negatives (not larger than 4 x 5) among the members of the exchange between the two countries. As each member will have an opportunity to make a duplicate copy, by himself, for his own use, it follows, from the large variety of foreign views which will be sent, that he will be able, in time, to accumulate, at small expense, a very interesting collection of slides, with which he can, during the winter season, at times, very agreeably entertain his friends through the medium of parlor lantern exhibitions. He will also have actual practice in the making of slides, which of itself is a pleasing and profitable pastime.

It is intended that a wide range of subjects shall be included, as, for example, the architecture of different American cities, represented by the principal public buildings and handsomest private residences; public monuments and statuary; noted American industries; historical localities; typical American customs (as far as such may be possible); landscape and marine views, and such other general views as might be of interest to a foreigner.

The proposed general plan of work in this country will be the exposure from each negative, either by contact or in the camera, of as many duplicate sensitive plates to each negative received as there are members of the exchange. Soon after the arrival of the negatives, a printed list of subjects duly numbered will be sent to each member, from which he can select such views as he would desire to have sent to him first. After that, unless he otherwise directs, he is expected to receive from the manager twelve sensitive plates which have been exposed to twelve different negatives. The plates will be numbered to correspond with the number of the negative, and a memorandum of the subject, as well as directions for development, will accompany each package. The sensitive plates will be exposed by an expert, and as each plate will have a correct exposure, based on actual experiment with each negative, there need be no difficulty in the member receiving the package, if he is careful in development, in obtaining twelve good slides; but, should he make a mistake in developing, or the plates get accidentally light-struck, he can, on application to the manager, secure a duplicate exposed plate by sending the number of the negative, at slight cost.

To defray the cost of customs duties, freightage, printing and postage, a nominal entrance fee of $2.00 will be required. According as the negatives last, the monthly dues will amount to the cost of two dozen $3\frac{1}{4}$ x $4\frac{1}{4}$ plates plus the percentage required for exposing or handling them, and the postage or expressage on same.

It will be noticed, the plan allows each member to develop the slides at his own convenience, while the original negatives are safely kept in one place under the supervision of one responsible person.

Each subscriber will be required to send me, on or before the first of October next, either by post or express prepaid, ten negatives, or instead, ten transparencies, $3\frac{1}{4}$ x $4\frac{1}{4}$ preferred, or not larger than 4 x 5, which shall be of suitable quality for lantern slides. The condition in regard to the transparancies is, that they shall not have any mat between the two glasses. I wish to make up a club of twenty-five members immediately, and am ready to receive applications. Correspondence on the subject is invited.

F. C. Beach,
361 Broadway, N. Y.

METALLIC DRY PLATE BOXES.

Some months ago the investigations of the Society of Amateur Photographers of New York brought to light the very important fact that the paper packing in the boxes in which dry plates are sold was the cause of the rapid deterioration of the plates. This deterioration was attributed to the presence of hypo in the paper. After a number of experiments we became satisfied that hypo was not the cause of this deterioration, but that it probably arose from the action of the air upon the resinous matters in the packing boxes and paper. When we became satisfied that our conclusions were correct, we urged our publishers to use some kind of metallic packages for dry plates. After some experimenting they have perfected a very neat metallic box in which the plates are packed, so that the films do not touch one another and are out of the influence of paper. Another advantage in these boxes is that they can be used to store the negatives in after they are emptied of the original plates.

We see no reason why plates packed in these boxes should not retain their good qualities for many years. They have been especially designed for amateurs, and are made for the smaller sizes of plates. We think they are decidedly a step in the right direction, and must congratulate our publishers on their prompt attention to the needs of amateurs. But we do not see why the large plates used by professional photographers should not also be packed in these boxes, since they afterward make such handy negative boxes.

The separators used in the box are made of spring steel, and are adjustable, so that they serve as separators and also to prevent breakage. The idea originated with Col. V. M. Wilcox, who has applied for a patent. Will be in market shortly.

MOUNTAIN LAKE PARK PHOTOGRAPHIC EXCHANGE CLUB.

The second annual meeting of the Club was held Tuesday, July 28, the President, Prof. Charles F. Himes, in the chair. The attendance was very good, including members from Philadelphia, Baltimore, Martinsburg, Wheeling and Cumberland. The Secretary, A. A. Line, Esq., of Carlisle, Pa., presented the nominations of the Executive Committee for active membership, and also the name of Robert E. Shriver, Esq., of Cumberland, Md., for honorary membership, with an indorsement as one of the earliest and most successful amateurs. The President added that he had known Mr. Shriver personally nearly twenty-five years ago as a member of the first Photographic Exchange Club. He was elected by acclamation.

The subject of isochromatic photography was introduced by the President by the exhibition, side by side, of copies of an oil painting by the old process and by the chlorophyl process of Mr. Ives, of Philadelphia, as described in ANTHONY'S BULLETIN of July 11, accompanied by a process-print of a photograph of a color chart by the same process. The gelatine film stained with picric acid was shown, which was found by Mr. Ives to be equally effective and more convenient to place before the lens than the bichromate of potash solution as first employed by him. There was a general expression of surprise at the approach to uniformity of the rendering of all the colors by the process. In the same connection, in reply to inquiries, the photo-typographic process of Mr. Ives was explained, by which printing blocks of artists' wash drawings have been made that gave impressions mistaken, even by critics, for those from engraved blocks.

After half an hour spent in examining a number of prints by the different members, which were passed around, some of them unique in composition, especially groups of children, the paper-negative process was introduced by the exhibition of negatives, and of prints from them. The latter were pronounced fully equal to those from glass negatives. Unoiled negatives were also shown, and the holders for adapting the paper to any ordinary camera and the patented roll holder were explained. The interest of amateurs in the matter was manifested by inquiries as to manipulation of the paper, ease of development, permanence of the negatives, comparative cost, etc. In most of these respects the paper negatives seemed preferable to glass, while their mailability as negatives, or as sensitive films, their lightness, and freedom from breakage seemed to render them the long-sought desideratum of amateurs. It was suggested that they would be especially convenient in stereoscopic photography, since the negatives could be so readily cut, and transposition of the prints thus be avoided. A lady member closed the discussion by stating that she had no experience of her own with paper negatives or roller-holders, but it might be of interest, and perhaps profit, to the members to have their attention called to that of Mr. Smith, as narrated by Luke Sharp, of Detroit, which she accordingly read. On a long excursion he got thirty-six exposures of most exquisite views upon the paper in his roll-holder, the first of which he proceeded, with some pomposity, to develop before the club, only to discover, while all were peering into the developing tray, that the back of the paper had been exposed instead of the film side. Parties half decided in favor of paper negatives wished to be satisfied if there was any real difficulty in distinguishing the film side of the paper, and were assured there was not. A number of other practical points were informally discussed, and, among the novel photographic apparatus exhibited, Anthony's Detective Camera elicited considerable interest.

Resolutions were passed requesting that a list of the members, with their postal addresses, be furnished each member, and that exchange of work and correspondence during the year be encouraged.

The Executive Committee was instructed to invite the members of the different amateur clubs to participate in the next annual meeting, and join in a camera-meet; and to fix the date of the meeting in August, and send the invitations before the 1st of January next.

Resolutions of thanks to the Park Association for the provision made by it for photographic practice were passed.

After election of officers for the ensuing year, on motion, the Club adjourned.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

MINUTES of the regular meeting, held Wednesday evening, August 5, 1885, the president, Mr. Joseph W. Bates, in the chair.

The minutes of the last stated meeting having been approved, Mr. Wood showed a device for attaching a camera to a car window to use in taking pictures from a train in motion. It consisted of a brass plate, which, by means of a flange turned down at one edge and a set screw underneath, could be firmly clamped to the window sill. Two small spikes on the inner side of the flange helped to hold the plate in position, and the camera was screwed on to the plate in the same manner as to the head of a tripod.

Mr. Wood also showed a number of views taken in Camden, showing the devastation caused by the recent cyclone.

Messrs. Wilson, Hood & Co. showed some negatives made on the Eastman negative paper and a number of prints from paper negatives. The prints were remarkable for their fine detail and the apparent entire absence of any trace of the grain in the negative paper, it being practically impossible to tell whether they were made from glass or paper negatives.

For use in ordinary plate holders, thin

pieces of wood, about the thickness of the glass plate, are provided, on which the paper is held in position by a thin frame fitting tightly around the ledges of the board, which is then placed in the holder as though it was a glass plate.

An exposer of ingenious construction, the invention of Mr. Stiff, was also shown. It was intended to be used for either instantaneous work or time exposures, up to about 30 seconds.

The slide of the shutter, instead of having the usual opening, was simply cut across so as to form two rectangular pieces, the lower piece covering the front of the lens, and the upper one being supported just above, with its lower edge in contact with the top of the first piece.

A pneumatic release caused the lower piece to fall and uncover the lens, and after an interval, determined by the adjustment, the second piece fell, completing the exposure.

The length of the exposure was regulated by an ingenious contrivance, in which a lever or pointer, operating over a graduated dial plate, changed the size of an opening in an air chamber, so that the air, under pressure of a rubber cap, escaped more or less rapidly, the second shutter falling after a certain quantity of air had escaped.

Adjourned.

ROB'T S. REDFIELD,
Secretary,

PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

SAN FRANCISCO, July 28, 1885.

JULY 19 was the time appointed for the "field day" of the Pacific Coast Amateur Photographic Association. This being the first "field day" of the summer, a large turn-out was expected, especially as a prize had been offered by the association for the best negative obtained. With the usual luck attending such events, however, the morning was foggy and windy, which so damped photographic ardor that only eleven members were on hand in readiness to take the eight o'clock Saugelito boat.

It is one of the fictions of photography that since the advent of gelatine plates all the necessary materials for a day's outing can be carried in a small hand-bag, but the pile of luggage on the lower deck effectually dispelled the illusion. The man who in the days of wet plates would have been satisfied with a small camera, shield and lens in one package, and a tripod, dark tent, bath, glass and chemicals in another, now goes into the field with the following outfit (and I assure you the picture is not at all exaggerated): one whole plate camera with four or five double backs, a plate box containing a dozen whole plates, a changing bag or tent, tripod, long focus view lens (as big as your head almost), a rapid rectilinear lens, a wide angle lens, and a pair of stereoscopic lenses, with the accompanying fronts and flanges, a half plate camera with three or four double backs, one or perhaps two finders, an instantaneous shutter, and lots of other small truck too numerous to mention.

The truth of the matter is, we are never satisfied unless we can bring home twenty or thirty negatives as the result of our day's labor. There is only one way to prevent this misapplied energy, and that is to make it a felony for any amateur to carry more than one camera or take more than six negatives in any one day.

It might be considered, however, that the committee were in this instance to blame for the huge pile of impedimenta lying, as aforesaid, on the lower deck, for they had unsuspiciously announced that a "conveyance would be at the station to carry cameras to the field of action."

The fog still hung over the bay, while old Tamalpais was all but invisible in the gloom. Had it been otherwise, the rest of the passengers would probably have been edified with the vision of eleven cameras ranged in a row along the deck, and a mild and amiable lunatic behind each camera, patiently waiting to get a shot at some passing steamer, yacht, or fishing boat. As it was, the ears, and not the eyes, of the passengers were astounded; for amid the babel of voices could be heard such expressions as: "Three seconds with a C. I. P. plate and f-60 stop," "Use a dilute solution of nitric acid and then re-expose to light," "Five-inch focus and covers a ten by eight plate," "One grain of pyro to the ounce and lots of bromide," etc., etc., till the air was fairly blue.

At Saugelito, cars are taken for Blithesdale Station, where, sure enough, we find a "conveyance" waiting in the shape of a large two-horse wagon. Into this we stow all our "truck," and then walk up "Old Mill Canon." By this time the fog has disappeared, though the wind blows hard enough to make rapid plates and drop shutters essential. Half a mile from the station we come upon our first "bit"—a view of Mt. Tamalpais through the trees, with a bank of ferns and piece of road on one side balanced by a field of thistles; a difficult subject, yet capable of making a gem if properly handled. Cameras are unlimbered and everybody goes to work. It is both interesting and instructive to watch the motions of the different members. First, there is the reckless member who makes three exposures in as many minutes, besides spoiling another plate by neglecting to put on the lens cap before drawing the slide. Then there is the careful member, who moves his camera a dozen times and tries three or four different lenses before he is satisfied. Next, there is the cautious member, who waits until everybody else is through, and then cross-examines each as to lens, stop, and time of exposure, making his own exposure depend upon the data thus obtained. Next, the beginner, who is not quite certain whether he exposed plate C or D, and who is also in a general state of uncertainty as to whether ten seconds would not have been better than the scant two seconds which he was advised to give. The old hand, meanwhile, wanders about, giving hints to this one and that, adjusting a focus here, and arranging a foreground there, and making himself generally useful. At last everybody is satisfied, and we move on to pastures new. A few shots are taken on the way up the canon, but nothing particularly interesting is met with until we reach our destination, "the Old Mill." Cameras are again unlimbered, lunch baskets stored away in a shady spot, and for an hour or more the mill and its surroundings are exposed to a perfect fusillade. Then, after refreshing the inner man, we light our cigars (except our English member, who, of course, prefers a pipe), and tell more big stories in an hour than could a party of fishermen in half a day. Then one of the members exhibits a new changing bag or tent of his own manufacture, and sets it up on an old stump, preparatory to changing plates. In so doing, his foot slips and exposes to view a Mexican Carolus IIII dollar of 1795. Two or three members jokingly claim it, when almost immediately another dollar is discovered. Then the fun begins; photography is forgotten and in an instant we are all on our knees thrashing and digging around the tree stump. In a few minutes we have unearthed eleven old Mexican and Peruvian dollars (just one apiece). This is about the end of our "bonanza," though one member finally discovers another dollar, which impels us to fresh exertions; but it is of no use, we have exhausted the "lead." How the money got there is a mystery, as there is not a house within a mile, and the old mill has been deserted for a quarter of a century. Probably one of the mill hands had buried there his week's wages, or these coins may have been the remains of a larger deposit. At any rate, when the story was told on our return to Saugelito, half the town started off treasure hunting, but no news of any new discovery has reached me at present writing. After the scramble was over, it was suggested that the scene would have made an admirable subject for our prize picture, "Expectation," but none of the members were willing to reassume their positions and be handed down to posterity in such ludicrous attitudes, and so the idea had to be given up.

In the afternoon a few more exposures are made, and then cameras are again packed and stowed away, and the last train and boat caught for home, all agreeing that the "field day" has been most enjoyable.

W. B. TYLER,
Cor. Sec. P. C. A. P. A.

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PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

BUFFALO, N. Y., July 16, 1885.

THIRD DAY, EVENING SESSION, 8 P. M.

The President called the association to order at 8 o'clock.

The *President*—I believe the first subject will be the discussion on the development and handling of dry plates.

Mr. BELLSMITH—Before that is brought up I would like to read the report of the committee which has been appointed on the awarding the Gennert prize.

The report is as follows:

Mr. *President*—Your committee appointed to award the Gennert prizes, for the two best photographic exhibits from Germany, desire to report as follows: That the first prize be awarded to Fritz Eilender, of Cologne, and the second prize to Frederich Mueller, of Munich, and in addition desire to express their appreciation of the extraordinary merit, the beauty and general excellence of the entire foreign display. The peculiar style of the German work being so different in many respects from that prevaling among American photographers, they have proved extremely interesting studies, and we doubt not will lead many of our members to emulate the style of these most excellent examples from our German brethren.

G. CRAMER,
G. M. CARLISLE, } *Committee.*
H. S. BELLSMITH,

On motion, the report of the committee was accepted, and the committee discharged, with the thanks of the association.

The *President*—Now we are ready for discussion.

Mr. INGLIS—I thought that this was going to be a subject that every one would be ready to make a grab at. They seem to be very slow to take hold, and I rise simply to open the discussion. In regard to that paper that was read of Col. Stuart Wortley's, I was very much pleased with it for its condenseness, and the peculiar way in which the developer was put together and given to us. Yet, nevertheless, as far as my experience has gone, I have changed my mind as to the very fine qualities of the ammonia pyro developer. I have of late adopted the potash developer, for reasons which I think quite justifiable. There are objections to the potash developer which are not met with in the use of the pyro ammonia developer, and that is as Col. Stuart Wortley has said in his paper. Perhaps I am mixing the two papers together; I would not like to say, however. It is to this effect, that the pyro ammonia developer will develop much quicker than the potash developer. I know that the potash developer may be made to work very rapidly also, but in doing this the good qualities in the plate are not brought out. As far as I have been able to use it, there is no necessity for saying anything as to how I use it —that is, how I compound it, inasmuch as it is in use all over, and any one may have it. Mr. Carbutt has a developer which works very much in the same way. It would not matter whether I used it the way he puts it together or the way I have it put together; that would not make any difference at all. However, the beauties that I find in it are these, or some of them, at any rate. If I have a plate that is very much under-timed, I can, with much less care and difficulty, bring out down into the deep shadows with the potash developer, which I was never able to reach with the ammonia. It certainly takes much longer time to do it, and I think it is because of its taking that longer time that I get better qualities.

I can also keep it from becoming hard; that is, I can keep the negatives from becoming hard or harsh in any way whatever, with the potash, by using it exceedingly weak. Sometimes I will take one dram of number one and two drams of number two, and I will take as much as twenty, and sometimes thirty, ounces of water to that very small quantity; that is, if the negatives have been very short exposed—that is, the short ones. I have taken sometimes six instantaneous ones, and sometimes I will often add more water than that, as I see how the plate is progressing. It is impossible, I think, for any one to tell another exactly how to work. It seems to be an instinct; I seem to feel what is wanted. I only stated this as a sort of foundation that any other ones may work from. If the plate comes out showing any kind of hardness in the whites, I immediately add more water to it. Scarcely any one can realize the amount of water. I will simply add —simply by the appearance of the progress of this developer, and I have been more than once astonished myself at the result. I have simply kept away the harshness that would otherwise come about, and I have never yet failed to bring the clouding out, so far as it seemed to be possible to bring it out, without producing the slightest sign of harshness or contrast. I generally, most always, though not always, altogether bring all that is to be brought out, not too thin, and yet have the negatives good. When I arrive at this last stage, I then put off that weak developer as I rinse the plate and commence with the normal developer, or that which is more than normally strong; that is, that which is more concentrated than the normal developer, and immediately the density will be put upon the negative; it will come very rapidly upon it. I would also say here that any one trying this must have their wits about them and their eyes wide open to watch that the shadows—that is, that it does not become thickened; otherwise there will be an unequal negative, and consequently longer printing—one that will print from. If any one is careful in watching when they apply this concentrated developer, they will bring forth the picture with the proper density of color needed to be used as a printing negative, and that will be the result. Now, this will take a very considerable time to do, but you will have to have patience and go through sure with it. In cases of this kind, where any one lacks the patience or has not got the time to go through with it, they are just where they were before. They took negatives, and they have not got anything. I should also state how I work these plates from an opposite point, and here I would like to make this statement to this audience, and any one of you may not believe it unless you like to. There are some of you who won't. I will expose a plate and give you a print from the negative, which will have the appearance of a full-time negative—full-timed enough, and you may consider it is over-timed—and I will take another portion of that same plate and expose it a thousand times longer, and I can give you the two prints, and you will not tell me which is the longer-timed or which is the shorter-timed.

Now, if I have a plate which I know has been timed too long, I will proceed in this way. Instead of taking one dram of number one, and two drams of number two, and twenty ounces of water, I will take two or three drams of number one—which is the pyro solution, as you all know—and I will take perhaps one-fourth or one-half dram of number two, which is the accelerator of potash, and instead of using the forty ounces of water, I will, perhaps, use an ounce and a half; by this means the plate is developed in the high lights. The high lights are brought forth, and the density is got over rapidly and colored, and the shadows have not been reached yet; and before I get down to the shadows I have a sufficient density to stop. If I find I have not put in quite sufficient of the accelerator, I put in a drop or two, as the case may be; it will immediately respond with what I want. Therefore, I advise all photographers to give one-half of the whole more time in exposure than what is necessary for the exposure of the plate, beginning always with an excess of the pyro and with less of the accelerator, reserving in your own hands the accelerator to bring forth anything that you wish—that is, to bring forth the negative to the point that you consider, that you have decided, will make the best negative. If you happen by any means to under-time, you have in your hands the power to bring forth a rich, yellow negative, and if you have over-timed, you keep a reserve in your hands; in either case, whether it be over or under-timed, by weakening the developer in one case and strengthening it in the other.

Mr. TAYLOR—If you will permit me, I will read a sentence from the paper with reference to a method of developing that may have escaped your notice.

"In my own practice with instantaneous pictures, I find it to be of the greatest use to give the plate a preliminary wash with water containing 1 minim of ammonia to every 2 ounces of water. It certainly increases the sensitiveness of the plate to the subsequent development."

Mr. BELLSMITH—Mr. President, I made a discovery once by accident. In a hurry I put my plate into the tray, mixing my developer, and neglected to put any pyro in the solution, and put the developer on my plate, and let it stop there for a minute, and nothing appeared.

Mr. INGLIS—What was your developer before you put your pyro in?

Mr. BELLSMITH—Two sodas in equal parts —four ounces of each soda, thirty ounces of water, one ounce of solution to six ounces of water, and after keeping the soda on the plate from four to six minutes, I saw there was no evidence of its appearing, so I threw it out and made up my developer, and I found out at once that I did not put in any pyro. It was a picture of a child. It was very short-timed any way, and after putting in the pyro, the normal devoloper, the picture came up, and I made a full-timed negative from the original negative, and I would like to speak of that. I don't know whether there is anything in that, or whether that system could be adopted on short-timed negatives or not.

Mr. TAYLOR—That is strictly analagous to this experience of Col. Wortley's.

Mr. CROUGHTON—I might say that during the last eight months I have had about as hot an experience at development as any man could have had at this convention. I have had to develop negatives in the heat of June, in the city of New Orleans, and my practice certainly bears out what Mr. Inglis says. We in England had a preference for the ammonia developer. I think that if the subject was canvassed you would find that eight out of ten use the ammonia pyro. In coming to this country, I found that the potash pyro had just been introduced, and was meeting with favor. The use of the sulphite of soda was common to a far greater extent than it was on the other side of the water. I remember that when I left there the controversy with reference to sulphite of soda was very heated, some saying that it was no good, and others arguing on the other side. When I went to New Orleans the potash developer was recommended. I had never used it before, and was skeptical about it, always having used the ammonia developer; but that was exactly in the same proportion and under the same idea as Mr. Hoover's developer; that is, that the restrainer, the pyro and the bromide should be together in one solution and the accelerator in the other. Now, I guarantee to say that there are some members of this photographic association present here in the hall who will say that that was a mistake; that if you put your bromide with the accelerator you have fixed the solution, and you have no control over the developer. If you put the bromide with the pyro, then you have both a restrainer and an intensifier together. You use, then, the accelerator, whether potash or ammonia, and you may then use it at your discretion, and have absolute control over your negative.

Mr. Hoover himself makes up the pyro potash developer, and when I saw that he used such a large amount of sulphite of soda I asked the reason, and he told me that after a series of exhaustive experiments he had decided that the sulphite of soda was of no use as a developer unless used four to one—that is, four of the sulphite of soda to one of the pyro. Well, gentlemen, I have used that now for nearly eight months, and it has been developing all day long and far into the night sometimes—occasionally three nights a week until twelve o'clock at night—and I have modified it in every way from the formula; but I still return to the conviction that Mr. Hoover is right, that the sulphite of soda in that proportion, four to one, is best. I have published my experience in the *Philadelphia Photographer*, which is exactly coincident with Mr. Inglis. I exposed a plate and made a very difficult experiment. The plate had to be exposed at the dinner hour, as that was the only time during which the machinery was still. We made five exposures on that machinery; every one was under-timed. The reason of this was on account of the light. The plate could not be exposed for the proper length of time. The only way that I could succeed in getting over this difficulty and taking the picture of that machine was by doing as he says; I used four times the amount of accelerator to one of pyro, put water and water and water into the dsh until my dish overflowed with water, and it took three-quarters of an hour to develop. The result was exactly as if that negative had been full-timed even into the deepest shadows, and even on the matched boards the lines of the matching of the boarding showing very plainly on that negative. That is the way Mr. Inglis says that he will give you one exposure and then give you another a thousand times as long, and give you plates identical. He means he will give you one-thousandth of a second exposure and develop in that way, and then he will give you a second exposure, and give you two negatives identical. That is scarcely fair.

Mr. INGLIS—That is fair sometimes.

Mr. CROUGHTON—In my experience, gentlemen, I think that the direct tendency of the use of the dry plate is to under-expose. Where you under-expose you may get a good result, although you may not get a first-class result. My experience is based upon the exposing of plates which were developed in New Orleans. If you want to get the full normal development in this way, you get as good a result as if you gave time enough to reduce your accelerator one-half. I would rather have an over-timed plate and reduce the accelerator, increasing the pyro and restrainer, by far. You get all of the detail that is necessary, and you get an effect that you do not get with a plate that would require the normal exposure. I think the great fault is under-exposure. We got so used to the rapidity of these plates we think that they can do more than they can, and by sending out operators to make exposures. In this way you do not get such good results. It was continually impressed upon them that, whatever they did, they should not under-expose. You had better over-expose and then do as suggested. I think you may get a good picture with over-exposure; you can never do anything with an under-exposed one.

Mr. MAWDSLEY (being called for by many) said: I can mainly speak in confirmation of what Mr. Inglis and Mr. Croughton have said. My own experience of instantaneous work, when I have had a very rapid exposure, has been the same. What I would say would be in confirmation of what these gentlemen have said. I was observing that I have done a great deal in the line of instantaneous photography with gelatine plates. I have found, by endeavoring to force the development by the addition of a large amount of the accelerater I got discolored negatives; that although they might first look tolerably well, yet after being kept they were very much deteriorated by a very deep color. Then I tried the effect of diluting the developer, and I think I went to a greater extent than Mr. Croughton says. When I had a plate with a minimum exposure my method of treatment was this: I took a slight quantity of the normal developer that I diluted with twenty, thirty or forty volumes of water, simply putting my plate in a tray, covering it up, and leaving it to take care of itself, knowing very well that my duties took me elsewhere when developing other plates, and when these were finished I could return and find a really first-class negative. Now, on the question of exposures, I do not quite agree altogether with Mr. Croughton. I think that there is a right exposure for all plates; being a right exposure, I say the normal developer should give the best results. We have got to consider this question of the exposure. I think in the matter before us that the difficulties are very small indeed—it is a matter of judgment in the case of the camera exposure—the light is the same. That is what I mean to say, that we have the control of it. If you watch it thoroughly, you can work it. The only factor which gives rise to uncertainty is the power to light; that is the unit, and the only one to be taken into consideration; but having hit upon that, I consider the normal developer—that which is sent out by the plate makers, that which ought to be the best, and which is the best, as they try their plates under crucial conditions—with the proper exposure, will give the best results. All these other things are promises; if you have not had the experience, you must try them, and do it in such a manner as to get the results. Therefore, as I said before, it is a promise and the result may be fairly satisfactory or not. Of course, this result can only be attained and arrived at from experiments.

Coming again to the question of over-exposure. There again I agree with what Mr. Inglis and Mr. Croughton said. I should indulge, I think, very much in the use of the pyro, and also the bromide, as a restrainer, adding ammonia as the occasion requires—that is, for my own use in the gallery; but when you come to landscape photography there is a difference between your camera exposures; it is not merely the power of the light, but the light varies so much and there are so many different conditions. In one case, you may be working on the seashore, and there you have the sun reflected and everything favorable to a very short exposure. Again, under other circumstances, you may be working in a glen or in a gorge, where the angle is very short and the light most powerful from above, but tremendous shadows; this will necessitate a longer exposure. The shadows are so tremendous and intensified in that case the development is all important; it is imperative that you should feel the way, beginning with a weak developer, and trying your details. If you find the trouble arises, it is easy to wash it off and mix a stronger developer.

Mr. COOPER—Mr. President, I am afraid I cannot express myself quite as loudly as I would like to; I have been talking so much for the last two or three days that it is almost impossible for me to hear myself think, much less to speak. But the topic that Mr. Taylor suggested from the letter of Col. Stuart Wortley is something that has engaged my attention for quite a long period of time. Almost during the whole of my experience in development I have aimed to find some method by which the exposure of the plate might be reduced to the minimum, and, at the same time get out all that I possibly could. I found on one occasion that the addition of an alkali decidedly accelerated; but it needed to be in a solution, and it set me to thinking. First of all, I attributed it entirely to the alkali. On one occasion, I found, by taking a negative which had been exposed with a drop shutter with two lenses of absolutely equal illuminating power, that I could wash one negative very thoroughly in running water, and get from that one twice the exposure that I could from the other that had not been washed. That also set me to thinking. I found further that if I took a plate in the dark room, and smelt of it, ordinarily there was no odor at all; if I took that plate out of the dark room and exposed it to the light and then smelt of it, there was still no odor present. If I dampened that plate, in a short time there was a very strong odor of bromine present. It suggested to me the question, how can the odor of bromine exist, if bromine is not liberated, because we know that there is no free bromide in the plate. That is what suggested it to me; that the action of the light on the bromide of silver plate was to liberate the bromine. Then it came to my mind that the reason that an alkali had this accelerated action was, that it took up the free bromine which had been liberated by the light, and transformed it into a bromide, and the bromide, which being very soluble in water, would be very readily washed away. Now, let me say, this bromine is soluble in water; but it requires thorough washing. The consequence was, I adopted that method of treating the plate with the alkali, and then washing it. You can treat it with the alkali, gentlemen, and not wash it, and you will get an accelerated action; treat it without alkali and then wash it, and your accelerated action is double. I demonstrated that fact unquestionably in the upper portion of the store of Messrs. Anthony & Co., in New York, and showed conclusively before one of the best experts that they have got in the dry plate business—that is, Mr. T. C. Roche—that the thing could be done. This was done in the presence of an amateur, who was extremely enthusiastic; he was here the other day; he insisted it could not be done. I went up-stairs, and, in his presence, I exposed some plates with the drop shutter; it was an extremely stormy day; it was raining, and the rain did come down in torrents. I said I will cover up one-half of the negative, treat it with soda, and then develop. This was done. The consequence was, one negative, full time, on a very stormy day, with a plate by no means extra sensitive, and the other was not one-third time. Mr. Roche came in; I showed him the negatives that were made. He said that it was impossible; that we couldn't fool him; that he knew better; that such a thing could not be done. Said he: "I have got some plates in a holder of mine up-stairs that I know about, and there is no fooling me; we will go up-stairs; you take one and I take the other, and see how it will result." There was nothing on one plate, and on the other a full-time negative. Now, this negative was taken in New York, and the fact is unquestionable. I demonstrated and experimented further, and found that, by the simple addition of soda, or any other alkali, it most decidedly accelerated; the washing was to remove that which had been changed into a more soluble compound than the free bromine in the film. The point is this: if there is any such thing as a restrainer in a film, it stands to reason that it will restrain; by removing it entirely you have no restrainer, and the consequence is, you get a well-timed negative. That is, if the capacity of the plate will allow. So much for that part of it. [Applause.]

Now, with reference to the idea of a weak or diluted developer. I have a concentrated formula, and I am not saying this for an advertisement, as I have nothing for sale; I am merely giving you my experience. I do not make it for sale, and I do not ask any one to buy it. I have a concentrated developer, and of course I know what power I have; I know the kind of plate that I put into it. I use the developer in its concentrated form. In using the present negative paper process I have found that it facilitates matters to develop several in the dish at once. My formula calls for one ounce of the concentrated solution and three ounces of water. That is the quantity of developer I use for an ordinary plate. I develop a large number of paper negatives together, and in doing so I use two ounces of the concentrated solution and thirty-six ounces of water—a sort of homeopathic mixture—that is, a sixth dilution, six times diluted. By that means the developer works a great deal better, and you can control it, and develop ten or twelve negatives at once, taking up one after another, developing slowly. On taking them up for trial, if the first one is not sufficiently developed, allow it to remain; try another one; see what you have got on that. I heard Mr. Inglis say that it was advisable to use a weak developer. I think that's what I heard him say when I was coming into the room. I certainly agree with him. It has been my experience that that is by all odds the nicest way to work. In regard to the matter of exposures, Mr. Mawdsley, I think, took a little issue with Mr. Croughton on the proper exposure of the plate. To be sure, mechanical appliances exist which are supposed to determine the rapidity of the plate and the actinism of the light. But we have not got to be mechanical men. We have got to use some judgment. The judgment of a man has got a great deal to do with it, and there is many a man who, with these aids, can manage the light very nicely, and determine what kind of light to use with a certain kind of plate, which will work in such a time; but the conditions are entirely changed when you have to photograph a different subject. When you photograph one thing, one plate of a certain degree of rapidity is excellent, and will do its work beautifully in a second or a fraction of a second. Take identically the same light; turn your camera around in another direction, and the circumstances are altogether altered, and you will have to change your method of timing to get your results. Your results vary with the degree of common sense you use as to the time of your exposure. I do not know that there is any such thing as a rule by which you can lay down absolutely the correct amount of exposure. I don't believe it exists. If you use all the mechanical devices, you may succeed in doing so; but I think that with all these means common sense must be used to determine the final result. [Applause.]

Many an amateur has said to me: "What do you think is the best method of determining how much time I should give my plate?" That depends, my friend. It depends entirely upon what your plate is first; then next upon what you are going to photograph. I went to

Niagara Falls once, and I saw an amateur there—a person with whom I was very well acquainted—who had started out to make a view of the Falls. You, gentlemen, have been down there, and have seen the results obtained by the photographers there. You might think that you could go there and obtain the same results yourself; but if you would try it, I think you would be willing to admit they would be very far from what you saw there· There is no question about that. Still we went out, and I have this much to say; that I am particularly and deeply indebted to the photographers of Niagara Falls, and I want to pay them this tribute: that they are the men who possess no professional jealousies for outside photographers, even if they do for those around them. There was not a man there who was not willing to take me and show me the points from which I could get the very best view to make a picture, and they said: This is just the right light, and the wind is just right. You can secure your picture now. For it is a fact that at some hours of the day the wind is in such a direction that it raises a mist, and all you get is a fog, and no view of the Falls.

This gentleman that I was speaking of when I turned my camera toward the light, the sun was behind a cloudy sky, said, "You don't mean to say you are going to photograph like that." I replied, "I do." "Well," said he, "what do you expect to get?" I answered him that I expected to make a good picture. "Well," said he, "is that according to the rules laid down in photography?" I said, "I did not know," but that there was a rule that suited me, and that rule was that I should make that picture in this way. This was an icy scene that I wanted to make—the light passing over the ice. Said I, "That suits me for a picture." He said, "Your are going to fog your plate," and I replied, "I shall if I don't look out." I pulled my slide and I held my hat so that the sun would not strike the lens, and I made the picture, and I went a little while after and developed it. "Well," said he, "that astonishes me," and I have learned something, and I have no doubt it was a revelation to him. I had turned the camera toward the light, and made my picture. I tell you this because it is sometimes very difficult on account of the condition of the light at Niagara Falls to get any picture. It is rather singular, but there is a vibration of the light that don't seem to exist anywhere else. The light seems to be sometimes two or three times as rapid as if made anywhere else. Well, I made all my exposures for pictures—they were of icy scenery—with a drop shutter. I took pretty good care even in that case to use the diaphragm sufficiently large so that I could get plenty of time on it, and then I developed with a pretty strong developer with a large proportion of pyrogallic in it. I find a great many amateurs run away with the impression that if you have an instantaneous exposure you do not want to use plenty of pyrogallic solution. I have not found it so. A great many recommend you to put the alkali in; sometimes this is a good suggestion. I found I could take a plate that had been very short-timed, and with a little brush and a little dish of pyrogallic solution, I could dip that brush, and by its use I would start up the shadows instantaneously. There was no mistake about it. It was apparent to the eye. I have adopted that method for use at the Falls, and I intend to use that in all cases where I am engaged in working quickly. I use plenty of pyro, and this you must do when you have very short-timed negatives, especially an instantaneous picture. If I was not afraid o taking up your time I would make some remarks relative to the exposure of the plate. [Cries were then heard from all parts of the hall for the speaker to go on.]

Mr. COOPER then continued as follows: In regard to instantaneous exposures of plates I would say that there are two methods by which exceedingly fine results can be obtained. I call attention to the fact that, under certain conditions, we have a brilliancy of light and intensity of the shadows necessitating a particular kind of development, where, as I said before, the pictures are made in a glen. Now, with that object in view, I designed a shutter which is on the market today, but not in my own name, so I cannot be accused of taking any undue advantage in advertising it. I invented it and called it the light-distributing shutter. It is designed for the purpose of allowing a longer exposure for the shadows, and a less exposure for the high lights. With this shutter I obtain the result that I desire, and the sky is cut off as much as is necessary. Several parties asked me how I would do in the case where the conditions were quite reversed; that is, where the light is below and the shadows above. I was going down the river in a boat on the Hudson, making a picture of the Palisades and the water below. If those were the conditions, I would reverse the shutter. If the water was the reflecting surface, I would turn it upside down, so that the smallest degree of light, or the least illumination, would be thrown on the water, while the greatest illumination would be thrown on the foliage or upper part. I think that there have been pictures made in that way fully carrying out my views, and I hold that it has been fully shown that it is not simply a theory, but is a demonstrated fact.

Mr. ZAY—There is just one thing mentioned with which I cannot quite agree, and that is that any part of the picture can be screened from the lens; that is to say, that if one-half of the lens be covered it will only take half a picture. It does not make any difference what part of the lens you cover, that part of the lens will cover the entire plate.

Mr. COOPER—The gentleman does not exactly understand the proposition. The mechanical contrivance is such that it exposes the whole plate to the light; the light passes on all of the plate, but there is more time on one part of the plate, because the mechanical construction is such, and the arrangement is such, with the exception of a little curve that is almost in the form of an equilateral triangle. It moves around in such a form that the lower part has more time given to it than the upper; but still the whole plate gets the light, only that the light is cut off more rapidly from the top; it is not a diaphragm, it does not set over, but it does cut off the light more rapidly from one portion than the other.

Mr. ZAY—The shutter is in front of the lens, is it not?

Mr. COOPER—Yes, sir.

Mr. ZAY—I will repeat what I have said. It does not make any difference what part of the lens you cover. I maintain that the light will be equally distributed over the lens.

Mr. COOPER—No, sir; it is not so in this case.

Mr. ZAY—It is a scientific fact, and I don't believe it can be gainsaid; and I believe experiment will bear me up in that.

Mr. COOPER—No, sir; I think experiment will not bear you up.

Mr. TAYLOR—Mr. Zay would be perfectly right if the stop or diaphragm were in mechanical contact with the lens; and if it was separated from it by the hundredth part of an inch, theoretically it would be different. And when it is placed in front of the lens, as I understand it to be, then it would fulfill the conditions claimed for it by Mr. Cooper, certainly.

Mr. INGLIS—This is a thing which can be controlled and tested. I was very much of the opinion of my friend; but two weeks ago a young amateur, next door to where my office is, said: "Mr. Inglis, if I make the shutter with pieces in front of my lens it will be very much the same as your shutter which you put in front of your plate." Says I, "That cannot be so." Says he, "I think it is." Says I, "Let's try it." So we tried it, and I sat down.

Mr. CROUGHTON—Certainly you can cut off from the front of the lens any part you wish. A patent was taken out in England which consisted of the arrangement of narrow pieces of brass, and to come down upon the sides of the lens or top of it to cut off the sky. That was in the wet process, and you could make the outline of the landscape, and then with one-tenth of the exposure get your sky, and in that way get a good picture.

Mr. ZAY—Nevertheless, there is a scientific fact that no matter what the shape of the opening may be, or whether it is a little hole in one side of the lens, or whether it is across, or whether it is in the slides, the image will be just the same; whatever part of the lens is used, the focus of that part is distributed over the entire plate. The only difference is, it will be just that much slower, that is all, whatever part of the lens is used.

Mr. MAWDSLEY—That depends upon the position and upon the plate. If he puts a flap in front of his lens and puts it down to make the exposure, I think that he will find that he will change his mind altogether. If the gentleman refers to the diaphragm, so-called, the light will be equally diffused if in the proper place. Of course, there will be some little difference. As I said before, if put in front of the lens, above or below, I dare say it would cut off all that he covers.

Mr. COLLINS—I made a view of the iron works at our place with a wide angle lens. The sun shone right into the end of the lens. It was a pretty heavy machine to change, so I took my hat off and held it off in this way, so as to shut the sun off. I put my hand in this manner (indicating) just in front of the upper part of the lens, and I discovered, when I developed the picture, the upper part of the one was perfectly black. There was not a particle of anything to be seen. I had the trouble of going a mile in the rain to take it over again.

Mr. INGLIS—With the concentrated developer, or the developer which is spoken of by

Mr. Cooper, I have another thought which brings me up once more. Of course, if I have understood him aright, it is in contradiction to what I said. He advises the use of the pyro. Perhaps he did not hear what I said in the beginning. I have not found it to operate in that way. Now, where this is done in making an image, I would suggest the idea again, what was the accelerator used for, and in my case as against the one used by Mr. Cooper. Mr. Cooper, I have not the slightest doubt, has had experience with this identical thing, and I do not doubt but that all of you have experienced it as I have done. Therefore the remarks I may make, and the remarks that any other one may make, might conflict entirely if we do not operate upon the same line all the way. Therefore it is necessary, gentlemen, to take into consideration what accelerator, whether it be ammonia, whether it be potash, whether it be soda. I think there is a difference in the action that goes on, whether it is the one or the other. In the remarks that I made I would say that they apply only to the potash as the accelerator. I have a plate adapted to the use of the carbonate of soda as an accelerator. I did not intend to say anything about it. I will say this one thing, however, that I have to work in almost the opposite direction since I have adopted the use of the salt of soda from what I had to do with the potash. Therefore it is necessary to take into consideration the accelerator.

Mr. BELLSMITH—I think that the trouble is very nearly solved. The direct contension is over the developer and the way in which it is used. Mr. Inglis uses the accelerator in a certain way and Mr. Cooper uses the pyro. That is the difference. Mr. Cooper does not use any bromide in his soda-pyro, and Mr. Inglis uses it always. Now, the question arises, would the pyro without the accelerator—would that develop, or would that have the effect of accelerating? Well, of course, with the bromide, we do not know what that would do. I think it would not do. It would be in the opposite direction.

Mr. COOPER—The point is the other way. I do not use any restrainer in my developer at all except it can possibly be proved to be the fact that sulphite of soda is a restrainer, which I decidedly dispute. I use, in the cases in which I make use of the large proportion of pyrogallic acid, pyrogallic acid which contains in a moderate quantity the sulphite which Mr. Hoover recommends, but just twice as large—that is, eight to one of pyro, at least, if not more. The consequence is that with no restrainer, but with a certain proportion of developer, as I think more than one gentleman who has experimented with it in this room would bear me out, this sulphite has a peculiar action—there is a very decided action in the accelerator. Apply locally. I will say you will remember that I did not take issue with Mr. Inglis by any manner of means; I would not have you think so. I did not intend to make any remarks about it, as I understood Mr. Inglis was not referring to the pyro at the time.

Mr. INGLIS—I think that was because you did not hear me.

Mr. COOPER—I did not hear you, but the remarks which I made, in which I quoted Mr. Inglis' words without referring to anything else; that was the dilution of the developer.

Mr. INGLIS—Yes, sir.

Mr. COOPER—Again, I wish to say that I do not recommend that the increased proportion of pyro should be used in portraiture by any manner of means. My remarks have reference entirely to development of views. You remember that I was talking of views made of icy scenery, a very flat subject; that altogether alters the case. Now, another thing is this, that I particularly stated in my application of the increased proportion of pyrogallic acid, that it was not general but local. I take and just add it right to the film on the shadows. Gentlemen, just try it.

Mr. ZAY—I desire to say another word with regard to the stopping off of the lens—that it could not possibly be shut if in that manner. If it were possible to shut it off in that manner, then it would be impossible to take a picture with half a lens when you put a round stop in front of your lens. The picture would be made with the round stop in the center. All the edges would be shut off. There is just this difference, that the cut-off is far enough in front of the lens so as to take a picture, so as to get the same into focus. That is a different thing from the plate right in contact with the lens. Then it will shut off the light. Then all the light is taken from that particular place; then it comes in as a screen between the two. I am speaking of that case where it is not in contact with the lens. I say that it would be impossible to stop any part of the lens so as to exclude any part of the picture. I think that that is where the difficulty is. There can be no statement made to contradict the fact. I mean that any part of the lens will cover any part of the plate.

Mr. BARDWELL—There only remains one point, and that is as to how you view this question. It matters not so far as the scientific part of the matter is concerned, practically; we say the results are exactly as Mr. Cooper describes them, and that is sure.

Mr. BEIDEL—In answer to this gentleman, I say that if you put the opening in the plate or put up a diaphragm, it will make the picture over the whole plate. If you put it in anywhere else it will act as a shut-off.

Mr. INGLIS—Except where the diaphragm is, please.

Mr. COLLINS—In reference to these last remarks, I will say that I was making at one time a picture of a child. I exposed one-half for a second, and I had a picture; but I could not develop it. I laid it in the water and exposed another plate two seconds. I was sure I had it this time, but I did not get it. Then I went out and exposed another plate longer, and then I looked and discovered that my pyro too was all used up. I then made up some new pyro and used the rest of the solution as it was. The plate that had been exposed for two seconds was timed and made a good negative. The one that was exposed to three seconds was no picture at all.

Mr. INGLIS—In answer to the remarks made by the gentleman who last spoke, I would suggest that he would not draw the slide.

Mr. COLLINS—To satisfy the remarks of the speaker whom you have just heard, I would just say that I developed these plates. It was a very nice little picture, but there was no intensity to it. On the edge there was a kind of gray fog, with which some of you gentlemen are acquainted, but I succeeded in getting a good picture out of one of them. I will say this much, that I come here for information.

Mr. GARDNER—I would like to ask some old gentleman if it is possible to develop a plate with the pyro solution only?

Mr. INGLIS—No.

Mr. COOPER—It depends upon how your pyro solution is made. If you make your pyro solution, as it is called, with alcohol, you cannot. If you make it up with an acid preservative, you cannot; if you make it up with the sulphite as a preservative, you very decidedly can. I think that there is more than one man who can say the same thing, provided you give time enough. That would be so in any case.

Mr. JOSHUA SMITH—Now, here is the question of time, and there is something in that. There is a vast difference between a plate that has had a proper exposure and one that has had an under-timed exposure or an instantaneous exposure. I have observed during my experience in instantaneous work that a plate that has had its proper exposure and should be developed over must be confined to a dark room light, while one that has received the instantaneous exposure can be excluded from almost any light. Now, my theory is this, that with the fully exposed negative the action of the light has gone on in such a manner that it has become partly insensitive to ordinary light, while the one that has received the sensitive exposure can be exposed in a light; otherwise you are liable to get density during the development.

Mr. COOPER—I will relate to you a very amusing incident with regard to my experience with a photographer, in that repect. He made an exposure in his camera, and on development he found it impossible to get the shadows up, because, the camera being defective, light was admitted to the plate. He was much surprised at not getting any detail in the shadows, and when I explained to him that that was owing to the light on the plate, he suggested that it would be an excellent idea to restrain an over-timed negative by letting light on the shadows. [Laughter.]

Mr. INGLIS—I do not think I quite agree with the conclusion that Mr. Smith has come to in regard to the right-timed exposed plate and the under-timed one. I have an idea that the right-timed exposed plate is developed in the proper time, while the under-timed one requires a very long development. I have noticed just exactly what he says. But then I did not notice it in the same time that the other one would be doubtful at all. If you could develop the under-timed one as rapidly as I can develop the one which has been timed right, I know that I would have no trouble with the shadowing into the fume at all.

Mr. CRAMER—I would like to ask Mr. Cooper if he means an instantaneous drop shutter exposure can be made by adding more pyro solution to the ordinary developer.

Mr. COOPER—Yes, sir.

Mr. CRAMER—I would like to ask if he means to add more of the solution to the developer containing alkali.

Mr. COOPER—I refer to the pyrogallic acid solution only. The combination with the solution of sulphite in the proportion in which I use it is eight to one. There is no bromide. I would say further that it is quite alkaline.

Mr. CRAMER—It conflicts with my experience. I am not using any restrainer—or bromide.

Mr. COOPER—You are using an acid.

Mr. CRAMER — Salicylic acid and hydrobromic acid I regard as perfectly neutral substances; pyrogallic acid is also called an acid, but it is also neutral. Salicylic acid has no effect except its action on the pyro.

Mr. COOPER—Its object is to preserve the pyro.

Mr. CRAMER—The solution only keeps so much longer?

Mr. COOPER—I have no doubt, but that is the experience of the great majority. I myself have found that to be the case, that there really exists no necessity whatever for any acid at all.

Mr. CRAMER—A good send-off.

Mr. COOPER—Yes, a good send-off; that is a good way.

Mr. CRAMER--Pyrogallic with sulphite of soda alone does not keep as long as one that contains a trace of acid.

A MEMBER—Under what conditions and at what temperature?

Mr. CRAMER—In the ordinary bottle of glass.

Mr. COOPER—About what time do you consider necessary to test the keeping?

Mr. CRAMER—Say two weeks.

Mr. COOPER— There are gentlemen who have seen the concentrated developer which I have put up while at Messrs. Anthony & Co.'s which would keep six months when the sulphite was combined with no acid whatever; but with a very large proportion of the sulphite.

Mr. CRAMER—You are perfectly right in that. The concentrated solution will keep also. I have mixed an alkali developer ready for use with no concentrated solution in it; in very little water you can keep it a very long time.

Mr. COOPER—There is no question about that, because the less water the less oxygen to be taken up by the sulphite. The oxygen is taken up out of the water, unquestionably.

Mr. CRAMER—The sulphite of soda itself is used up in solution.

Mr. COOPER—That is my reason for keeping it in the concentrated solution.

Mr. CRAMER—I wish to state that my experience is, that the pyro developer also increases the contrast; this is so in every case. If the picture is over-exposed, you throw in a little more pyro and you will get a strong picture, where as otherwise you would have only a flat picture without any contrast.

Mr. COOPER—You refer to the portraits?

Mr. CRAMER—I don't see where the difference would come in.

Mr. COOPER—I will tell you where the difference would come in. You are perfectly right in your statement, but I am speaking of instantaneous exposures.

Mr. CRAMER—The question has been asked if pyrogallic acid alone would develop the picture, and it has been decided that it will not, as long as there is any plain solution, or that which is combined with an acid, but in combination with an alkali it will develop. Mr. Cooper has stated that it also will do so in combination with the sulphite of soda. That is for the simple reason that the sulphite of soda which we get in commerce is also an alkali. It contains a trace of the carbonate of soda. If it was anywhere else first it would be developed. Sulphite of soda itself will not make the pyro develop, but sulphite of soda not in combination with pyro alone will not develop unless it is alkaline.

Mr. COOPER—I thoroughly agree with you, unquestionably.

Mr. CRAMER—I believe that we will agree in many things after awhile.

Mr. COOPER—Mr. Cramer and myself have joined our issues, and he thoroughly agrees with me. You will recognize this fact, that while Mr. Cramer has thought of many things, he has forgotten to take into consideration the exposure of the picture, in which all the conditions are equal all over the plate. Now, I am able not only to develop the plate to a certain extent, in my poor scientific way, but also to mechanically try a method by which I control my picture. I will admit that if I attempted to develop a picture that had been exposed with ordinary drop shutters, I could not use the pyro without destroying my result. But by reason of the fact that I have so completely removed the tendency to the hardness in the sky, I am enabled to experiment on my shadows, with the result that I get far more out of them, without spoiling my sky or intensifying those high lights, than I otherwise would. You see the point, gentlemen; it is quite plain.

Mr. INGLIS—I think I shall have to get up again. If I understand Mr. Cooper right—this discussion has brought the understanding out

—I would never have needed to have arisen to have said anything in reply to Mr. Cooper in regard to the extra quantity of pyro that he puts in. What I say only applies to this mechanical exposure that he has brought into use. The whole thing is as plain as the nose upon his face and mine. I think that Mr. Cooper now agrees with Mr. Cramer, and that I agree with both, notwithstanding what I said before.

A MEMBER—I would like to ask Mr. Cooper if he used, instead of the pyro alone, a little fresh developer with the accelerator, it would not have the same action. My experience is is that the pyro loses its power as a developer. It seems to me that a little fresh developer would have a better action than the pyro alone.

Mr. COOPER—A little fresh developer no doubt would; but I never found that it made a great deal of difference. I am willing to admit that it is quite possible that it would, but I prefer using the pyro alone in these cases. I almost invariably, as I said before, apply it locally, that is, I have my dish ready and my ordinary developer; upon using this, I take my brush and apply it locally where it is needed. The pyro solution contains a larger proportion of alkali in itself, and, at the same time, it also comes in contact with a strong solution of soda, which has found its way into and has saturated the film. All I wanted was to increase the intensity in that locality. Let me say that I do not use, in this case, the full proportion of soda. The point was just this: I did not find that there was much—if there was anything—to be gained by the addition of the soda and the pyro also. Let me say further, that the gentleman said the pyro is very rapidly used up. That is the reason I put it in; because the first has gone and I have lost its power, and the other was needed to supply its place. I did not need any more soda. The soda was there, and was doing its work; the other was needed to supply the place of that which had gone.

Mr. CRAMER—I am right that the treatment was made to a shortly exposed plate—the use of a developer, saying that you might use a smaller quantity of pyro than usual. You need not push the development too far with your developer, but make a new solution, and apply that so that the action of the pyro gives an action. Again, the sulphite of soda, according to my experience, and the views expressed in the journals, has the effect of destroying the yellow color which would be otherwise produced by the sal-soda, or the potassium developer, and you can control the color entirely by using more or less of the sulphite of soda. The more sulphite of soda that is used, the more the tone of the negative will be reached, and the less of it that is used, the more yellow the negative will be. I am astonished to see the ammonia developer recommended again, in the formulas from abroad, and from Stuart Wortley. I think that since we have done away with the use of the ammonia, we do not get any more green fog, which used to be a very unpleasant defect in connection with the use of the ammonia developer. Furthermore, I do not consider it wise to use the three solutions separate. It is true, if you combine the alkaline, that you destroy the accelerating effect of the solution also, by restraining. But you will also prevent the fog; it would be because of an excess of the alkali, which will be invariably produced by adding an excess of ammonia to the developer. Your negative will be saved. You rescue that. That is true in this manner, by adding too much ammonia to it. The way of measuring out so many minims of this solution, and so many minims of the other three solutions for each negative, is, in my eyes, a little too complicated. A man is known for his practical sense. They would like to accomplish everything with the most simple means. And, in either the pyro, sal-soda or potassium developer, we have all the means in our power to correct over or under-exposure. My idea is, to use a solution of sal-soda; that is, alkaline, which I recommend. Potassium may be just as good in the same strength for ordinary purposes, the only difference being in the amount of pyro; always keeping in view that the greater amount of pyro increases the intensity in contrast, and the smaller amount of pyro will reduce this trace, consequently will be more adapted for short exposure.

I have found, by accident, a very good way for treating an under-timed plate. I treat the plate with a diluted developer; then, of course, the diluted developer works slow. It was at dinner time; I went away and waited; I put the plate in, and just washed it slightly, rinsing it once; put it into a little water, covered it up a half an hour, and, when I came back, the negative was perfectly developed in all its details, and just right in the lights and shades. That shows that slow development, with a weak developer, containing a little pyro, also will bring out the detail without compelling too much density on the high lights. Then, for a restrainer, I recommend the use of a strong solution of pyro, which is mixed with sal-soda solution. If you add to this some strong solution of pyro, 20 grains of bromide to the ounce, you will have a very powerful remedy for over-exposure. By adding a little of that to the developer, it increases the pyro considerably, and also adds bromide of ammonia, which I have done to restrain the shadows, making the light more intense in an over-exposed plate. I don't know of anything else, except some questions might be asked ; if so, I will be glad to answer them.

Mr. S. T. FELT—I would like to ask a question here. It is this: Why do they use salicylic acid to preserve the pyrogallic acid from discoloring, instead of the oxalic acid? My experience is, that the oxalic acid will preserve it for a much longer time than the salicylic acid. Perhaps Mr. Cooper or Mr. Cramer can answer that question.

Mr. CRAMER—Many different acids have been tried. The oxalic acid—that may answer just as well. You have the addition also of sulphuric acid—that has been used a great deal and answers the purpose also. You might use the oxalic acid; I see no reason why you should not. Objection has been made to the use of the pyro solution. It should be used as fresh as possible. Do not make it up a long time in advance; it is not necessary, and you have no means of preserving it.

Mr. INGLIS—I want to say a word with regard to the accelerators used. I had not intended to say anything else, but I want to give my experience with it. It has been said by Mr. Cooper and Mr. Cramer that, by the use of more pyro added to the accelerator, being sal-soda the greater density is obtained. Now, that is exactly as I have found it with the sal-soda; but I found it exactly the opposite with the carbonate of potash—exactly the opposite. I always add an extra quantity of the potash, but if I want to bring out more density, I do not add that extra quantity of potash. I sometimes renew the whole lot with an extra quantity. It is well to make a new lot, as I said at first. But with the sal-soda as an accelerator it is entirely different. I cannot gain density by adding sal-soda to the developer in an extra quantity, but I always can by adding an excess of the carbonate of potash. One thing more, in regard to the green fog that was mentioned. I think it was about three or four weeks since, the gentleman from Buffalo was down in Rochester, who put me upon the use of the sal-soda. I certainly do like it, since he has put me upon it, but I do not follow his directions exactly; I leave out the bromide, the small quantity of bromide of ammonia which he recommended to be put into it. His developer was simply this: Six ounces of a saturated solution of sal-soda, and forty ounces of water, and a few grains of dry pyro added for the development of the plate, and he says, if your plate is not going fast enough, add more; it shows that it is under-exposed; add half an ounce or an ounce to this saturated solution of sal-soda, and this will bring it out, and not give you too much density. Put the pyro in and it will.

Now, I was taking some of those instances that I know of, where it required all the pushing that could be put into it. I put in as much as two ounces of the saturated solution of sal-soda, and I had a good developer, just as good as I ever saw. This was the sal-soda and pyro. I think that that was very much of an improvement to anything that I had ever had before. I took a preparation which I had of pyro containing bromide of ammonia in it made up in quantity. I put in an excess —made a saturated solution, and I had no sign of the green fog at all. Therefore the bromide of ammonia prevented the green fog without any doubt.

Mr. WILSON—I want to say one word, and I rise now to express my personal satisfaction at this most interesting meeting that we have had to-night. I feel that I have enjoyed a great privilege, but I also think that if we stay much longer there will be under-exposed sleep and over-exposed bed clothes, therefore, I make the motion to adjourn, and also that the thanks of the convention be tendered to the gentlemen who have taken part in the discussion. Agreed to.

Adjourned.

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A gentleman of this city has a small boy who imitates George W. When a gentleman called recently the father said to him politely: "I wish I had another cigar to offer you," looking with regret at the one he was smoking. Now was the small boy's opportunity. "I know where they are, pa," he said, dragging open a drawer, and bringing out a box of a choice brand.—*Detroit Free Press.*

A Lewiston seamstress carelessly left a needle in the back of a young lady customer's dress, and now a particular friend of the family has his arm done up in arnica.—*Lewiston* (*Me.*) *Journal.*

There is a boarding-house in town where they always put two forks at the plate of a man who owes for board. They say they like to have one fork over.—*Ex.*

A youngster picked up a piece of unslaked lime on his way to school the other day and put it in his jacket pocket. During the session he jammed a wet sponge into his pocket and steam began to pour forth. He didn't know just what to do; the whole school was in a roar of laughter, and the frightened teacher flew to his side, thinking that his clothing was on fire, and hastened to remove the combustibles from his pocket. In doing so her hand was severely burned. He took a lecture upon his stupidity from his teacher with an air of amiability which suggested that he was satisfied if she was.—*Norwich* (*Conn.*) *Bulletin.*

"I'd rather die than get married," said one girl to another. "Well, I wouldn't," was the response, "for you can't get a divorce when you die."—*Chicago Tribune.*

A Troy lawyer gives as a reason for not going to Europe this summer that a rich client of his has just died, and he is afraid the heirs will get the property.—*Troy Press.*

The reason why men succeed who mind their own business is because there is little competition.—*Grimes County* (*Texas*) *Herald.*

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer communications of a technical character except through the columns of the Bulletin. *Correspondents will please remember.*

Q.—F. W. S. writes, and incloses picture this time: "I must have forgotten to send the print, although I could not find it around the place. The spot marked is what I mean."

A.—The light circle in your picture is a "ghost," and is caused by an imperfect adjustment between the back and front combinations of your lens. The two systems of lenses are either too far apart or too close together. If the latter is the case, the fault can be remedied by slightly unscrewing one of the combinations. If they are too far apart, you had better send your lens to an optician. Perhaps this is the best course to pursue in any case, as you evidently need a change in the tube that holds the lenses. Otherwise the picture is very good.

Q.—G. C. B. writes: "The illustration in the last number of the Bulletin, just received, speaks volumes for the Stanley plate. If the plates can do as good work uniformly, I shall use no other. Will you please be good enough to let me know the stop used, *i. e.*, the relation of aperture to focus, and the duration of the exposure, if it was calculated, by which the picture was taken?"

A.—The negatives were taken with an 8 x 10 Dallmeyer R. R. lens, using the third from the largest stop. The interval of exposure was probably the $\frac{1}{64}$th of a second. The development was with ammonia pyro.

Q.—"Grains" writes: I would like to call your attention to "Cooper's formula," or developer, as given by him with the Eastman brand of dry plates, as follows:

No. 1.

Sulphite Sodium (crystals)	1 lb.
Pyro	2 oz.
Water	2 qts.

No. 2.

Carbonate Soda (crystal)	½ lb.
Water	2 qts.

To develop, take of No. 1, 2 oz.; No. 2, 2 oz.; water, 2 oz.

Now, if you will look at page 40, "Mosaics for 1885," Cooper's developer is made as follows:

No. 1.

Sulphite Soda	½ lb.
Pyro	2 oz.
Water	2 qts.

No. 2.

Carbonate Soda (crystals)	½ lb.
Water	2 qts.

To develop, take equal proportions, water, 2 oz.; No. 1, 2 oz.; No. 2, 2 oz.

How is it that this second form of "Cooper's developer" contains only one-half as much sulphite soda, and yet works as well? You will also find in the same edition of "Mosaics" Mr. Inglis comes out in favor of "Cooper's developer," and yet his formula is not exactly like what Mr. Cooper prints as his formula.

On the strength of all this confusing way of making this developer, I attempted to make it in a small way, as follows:

No. 1.

Sulphite Sodium (crystals), 700 grs. (437½ grs. to oz.); Pyro, 88 grs. (437½ grs. to oz.); water, 6⅖ oz. (32 oz. to qt.).

No. 2.

Carbonate Soda (granular), 350 grs. (437½ grs. to oz.); water, 6⅖ oz. (32 oz. to qt.).

To develop: No. 1, 2 oz.; No. 2, 2 oz.; water, 2 oz.

If this is the same as Cooper's developer, then it does not work right. Instead of taking two ounces of No 2, one-eighth of an ounce seems sufficient for time exposures, and not more than one-half ounce if for drop shutter exposure.

What difference is there in strength between crystal and granular carbonate soda?

As soon as I poured this developer (one-eighth ounce No. 2) on my plate the films became black before the picture was half developed and rendered the negative unprintable. What was the cause? I tried alum and citric acid to remove the stain, but no change was apparent.

In giving formulas, in future, can't you say the number of grains to ounce, as there seems to be a difference of opinion as to whether you mean 437½ or 480?

A.—The above formulæ for Cooper's developer are different. The last one is, we believe, the one now used by Mr. Cooper (see the discussion on development in reports of Photographers' Association; third day, evening session). Your formula is evidently intended to represent the first one given above, but you have used granular carbonate of soda, which is an entirely different article from the crystals. The crystals contain about 62 per cent. of water, while the granular salt may contain only a few per cent., or none at all. Your soda solution is consequently too strong, and much less of it can be used, as you have already found out. In regard to the question about grains, the subject is one of the most perplexing things we have to deal with. It is next to impossible to determine which kind of ounce a man means generally, photographers are so careless in the use of terms. We think it would be much better if all solutions were made up *so much per cent. strong*, or so many parts in 100 parts of water. But even this method has some drawbacks, and the only reliable method we know of is the metric system, where there is a perfectly definite relation between weight and volume.

Q.—W. B. C. writes: "If you will tell me through the BULLETIN how to arrest the following difficulty, it will confer a great favor. I am troubled sometimes with a streak through my negatives of a very peculiar nature. About one-quarter of the negative will be in shadow that will sometimes spoil it. One side develops quicker than the other, leaving one side dark and the other lighter. The line is direct across the negative. Please tell me how to remedy this."

A.—As we do not know the kind of plates used, whether wet or dry, we cannot answer very clearly. It will be better if you can send us a print from your negatives, and some more particulars. It seems to us that your trouble may be in your camera leaking light upon one side of the plate. Give us more particulars and we will try to help you.

Views Caught with the Drop Shutter.

H. C. BEALES, Fulton, N. Y., is fitting up a new studio.

B. F. POWELSON, Buffalo, N. Y., formerly of Detroit, Mich., died July 8.

W. C. ROWLEY, formerly of New York, has opened a new studio at Elmira, N. Y.

W. H. DUNNICH, formerly of Troy, N. Y., has opened a new studio at Pulaski, N. Y.

J. S. Horg & Son's gallery at Rome, N. Y., was bady damaged by fire July 10.

G. P. Huesteed, formerly of Oswego, N.Y., has bought Mrs. Dunbar's studio at Baldwinsville, N. Y.

Mr. A. D. Gatchel and his sister, the son and daughter of Mr. W. D. Gatchel of Louisville, paid us a pleasant visit the other day after an extensive tour in the Eastern States. We were glad to see them.

W. H. P. Stoddard, of Main street, Evansville, Indiana, has a photographic department in his store, which is in charge of Mr. E. B. Hallock. The latter gentleman has a good reputation for his attentive and genial manner.

A permanent exhibition of the manufactures and products of the soil and mines of the United States will be opened at Rome, Italy, on November 1, 1885. It is under the auspices of the Italian Government and the Consul-General of the United States.

An exhibition of the products of North, Central and South America will be opened in New Orleans on November 10, 1885, and continue until April 1, 1886. S. B. McConnico, of New Orleans, is president, and the northern headquarters are at 234 Broadway, New York.

Mr. A. Semmendinger, of Fort Lee, the well-known camera box maker, died at his home recently. Many years ago he manufactured camera boxes in New York, and afterward went to Fort Lee, where he built a house and shop, and continued the business. He was noted for his industry and business integrity. Particulars in our next.

Just as we go to press we have received notice that the Eastman Dry Plate and Film Company have been awarded a gold medal at the International Inventions Exhibition at London. This is the highest award, and is for the display of photographs, negative paper and roll-holder. The photographs exhibited were from paper negatives by J. H. Kent, prints from which were shown at the Buffalo Convention. We shall have something to say about this process in our next.

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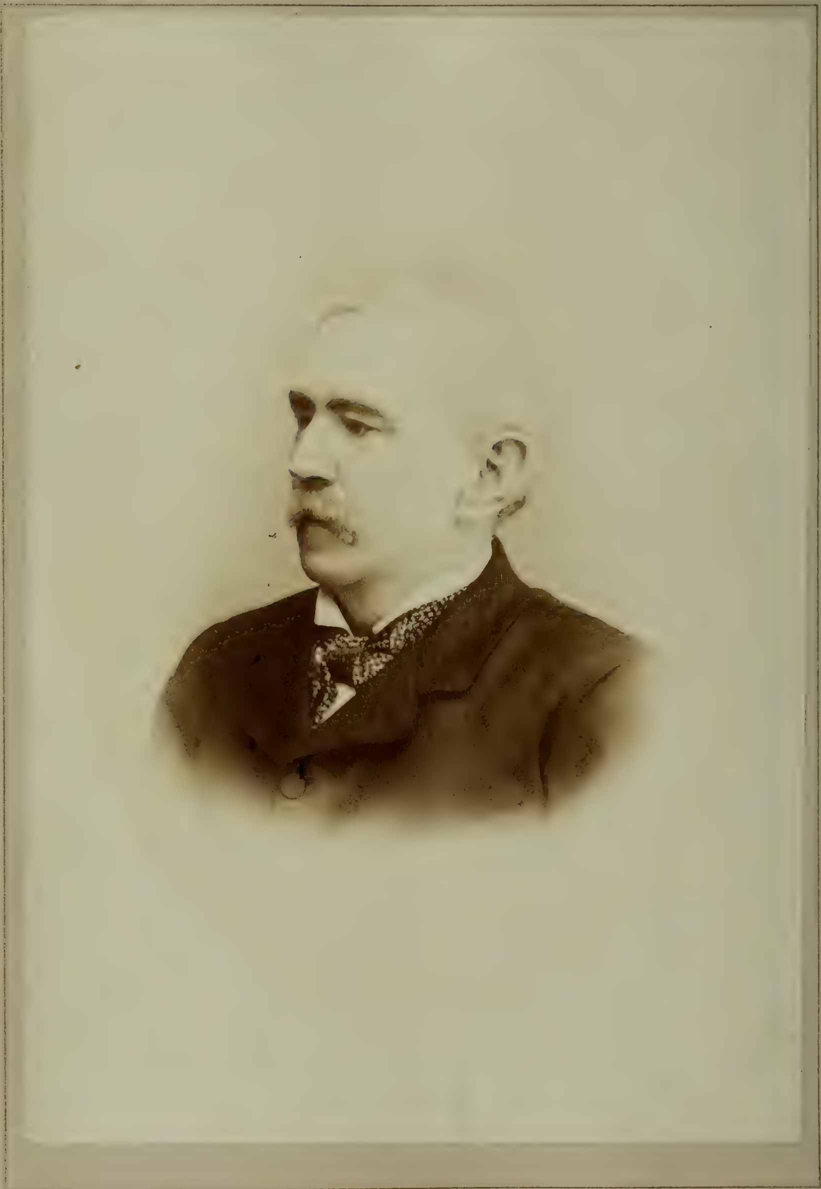
Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.



PRINTED BY O'NEIL, ON EXTRA BRILLIANT N. P. A. PAPER.

With good wishes for the Bul^{n} I
am very truly yours

H. C. Lea

ANTHONY'S
Photographic Bulletin.
PUBLISHED SEMI-MONTHLY,
Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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Vol. XVI. SATURDAY, SEPTEMBER 12, 1885. No. 17.

MR. CAREY LEA.

We have been asked a number of times to give as an illustration a portrait of this veteran photographer and chemist. We now do so, and although the picture is not as artistic as we could wish, yet it is a very good likeness of this much admired gentleman. We requested Mr. Lea to sit for a negative for us some time ago; but, unfortunately, his bad health has entirely prevented his doing so. We, therefore, had to content ourselves with copying a portrait made in France some few years ago, which Mr. Lea says is particularly good.

Mr. Lea has always been somewhat of an invalid, caused by over-study when a young man; and his extreme modesty and late poor health has prevented us from getting any details of his life. He is very well known in two fields of scientific work, viz., chemical research and photography. In chemical research he has done a great deal of work in investigating picric acid and its allies, the compound ammonias, the platinum metals, and nitro-organic bodies, notably nitro-saccharose and nitro-glucose. These researches, together with others of a photo-chemical tendency, were published in over sixty papers contributed to the *American Journal of Science.* In addition to these papers, his work in photography is scattered through the pages of the *British Journal of Photography,* and other journals, in the form of several hundred papers. In this latter branch he was mainly interested in development. When he took up the subject, the power of developing dry bromide plates was supposed to be possessed by two substances only, gallic and pyrogallic acids. To these he was able to add hematoxylin, and afterward a long series of organic salts of iron, including the now well known ferrous oxalate developer. Besides these, he found a great many other substances showed developing power: notably ammoniacal solution of copper and potash with acetone. It was also found that many other organic substances boiled with potash gave it developing power; and even some inorganic salts of iron, such as the hypophosphite, possessed developing powers. So that the faculty of development, instead of being limited to a very few substances, proved to be singularly wide-spread. Amongst his photographic contributions to the journals, are a series of papers upon the nature of the photographic image, which are highly interesting reading to the thoughtful student of photography. Another series upon the sensitiveness of pure silver iodide, are also to be remembered as permanent contributions to the science of photography.

Mr. Lea's well known Manual of Photography, is a monument to his industry, and remains to-day a standard on the subject.

We are sorry we could not succeed in presenting our readers with a more artistic portrait of Mr. Lea; but we did the best we could under the circumstances. Perhaps at some future time we may be able to give a better account of his very industrious life.

Next month we shall illustrate the Bulletin with a number of pictures by Mr. Chas. F. Smillie, the well known New York amateur, taken with a detective camera during a very extensive tour in the West. Our readers will find these pictures very striking examples of photographic art, and very instructive also.

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PAPER NEGATIVES.

We had scarcely begun to think about the wonderful development of the paper negative process, as exhibited by the Eastman Company, at Buffalo, when a well-known line was recalled to our mind :

"Coming events cast their shadows before."

It was in the year 1834 that Fox Talbot took the first paper negative. This was on paper washed with silver nitrate, and he called the process "Calotype." To obtain positives from this paper negative, he simply used another piece of paper sensitized in the same manner, without submitting the paper negative to any further treatment. Subsequently he waxed the paper negative to make it more transparent. This process is strikingly analogous to the process developed by the Eastman Company, and in which they have achieved so much success. It will be asked : How is it that the process was not developed in Talbot's time, and glass plates came into such general use ? A number of circumstances prevented this development. The use of collodion was unknown as a vehicle for the sensitive salts, and the paper was so uneven in its texture as to be greatly inferior to the surface of glass, upon which the silver salts could be suspended in albumen. Another and far more serious difficulty was to hold the paper rigid in the camera during exposure. In this latter particular, glass was found to be exactly the thing needed. This state of affairs continued until after the introduction of collodion, when further attempts were made to use paper as a carrier of the sensitive film in the camera. The most successful of these attempts was made by Warnerke, who introduced many years ago a roll-holder, upon which paper coated with a sensitive collodion film was carried upon a roll. This roll of sensitive film was stretched from one roller to another of the same size in a dark box with a slide like an ordinary plate-holder. In using paper in this manner a number of difficulties have to be overcome that are absent in the case of glass. The paper in the dark box has to be changed after the surface stretched between the rolls has been exposed, and some means must be taken to insure that a fresh surface is presented. At first it might be thought that so many turns of the rolls would be sufficient to bring a definite amount of fresh surface into position ; but the difficulty is, that as the paper passes to the second roll, its diameter becomes changed, and no definite number of turns is ever equal to the same amount of paper rolled on. To overcome this difficulty the paper was marked, and a little window of non-actinic glass was made in the dark box, so that the amount of surface rolled off could be seen. This overcame the difficulty of measuring off the surface ; but there was always some trouble about the paper not being flat and cockling. Indeed this roll-holder was unsatisfactory and very seldom used. The reason of this was owing to clumsy manufacture, and cumbersome and inaccurate adjustment of parts. It had almost been forgotten, when some ingenious Yankees saw that a well made and carefully adjusted roll-holder would meet with success in the ever enlarging army of amateur photographers. Messrs. Eastman & Walker have devised a roll-holder in which all the difficulties mentioned above are very ingeniously overcome, and have made the use of paper negatives possible.

The success of the Eastman process depends upon the intelligent use of machinery, both in the preparation of the sensitive paper and also in the manufacture of the roll-holders. By means of beautifully arranged machines, the paper, in long rolls and thirty inches wide, is coated with "Special" gelatine emulsion, and allowed to dry in perfect darkness. This insures a very even surface, and far more easily obtained than any method involving the use of human hands. The manufacture of the roll-holder is carried on with machinery, so that all the parts are easily replaced if damaged or lost, every piece produced being exactly like the corresponding piece made before.

We give below cuts of this holder, and will endeavor to make them plain to our readers. *Fig.* 1 shows the dark box carrying the rolls with the cover and slide-carrier raised. In this will be seen a light metal frame supporting two rolls, around which the paper is coiled. The paper in passing from one roll to the other is carried over a perfectly flat table made of strips of well-seasoned wood, cut across the grain to prevent warping. In the passage of the paper from the roll under the table to the upper surface, it is drawn against a small wooden roller at the end of the table, which performs two very important functions. This roller is just two inches in circumference in the case of a 5 x 8 holder, and at every complete revolution makes a sharp click with a spring against the under side of the table; at the same time a sharp point on the end of the roller perforates the paper near the edge. The ingenuity of this device and the accuracy with which its functions are performed, must be seen to be appreciated. In the above *figure*, to the left of the cover of the holder will be seen the hole in which the key is inserted to revolve the rollers. As this key is turned the rollers revolve, and at every two inches of paper rolled off a sharp click is heard; thus, in a 5 x 8 roll-holder, four clicks roll off the exposed surface and present a new one. The perforations in the paper made by the measuring roller serve to tell how to cut the paper into proper lengths in the dark room before development. The following cut, *fig. 2*, shows the cover of the roll-holder removed and the frame carrying the rolls raised to show the under side. Here will be seen two small rollers pressed against the paper

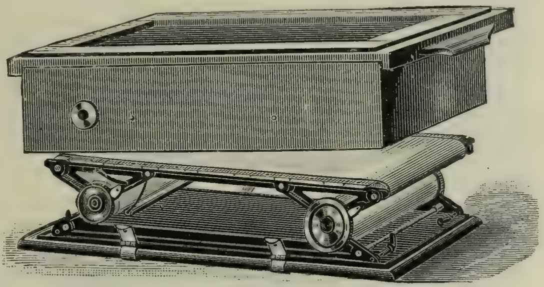

FIG. 1.

rolls by means of springs attached to the under side of the table. These entirely prevent the paper from cockling, and insures a perfectly flat surface upon the table over which the paper passes; indeed this surface is more flat than ordinary glass. Altogether, this roll-holder is a triumph of American ingenuity, and deserves the greatest success.

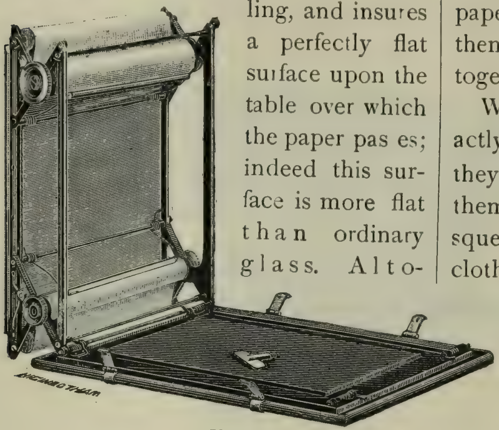

FIG. 2.

The rolls of sensitive paper come already prepared, see *fig 3*, and are quickly inserted into the holder. They are packed in paper boxes and the film is rolled inwards, while the end of the roll is marked to fit, so that the wrong side of the paper cannot be exposed. The boxes serve to store the rolls, when they have been entirely exposed, before development. This sensitive paper is also cut into sheets to be used in ordinary plate-holders, and for this purpose a very neat carrier has been devised, which we illustrate in *fig.* 4.

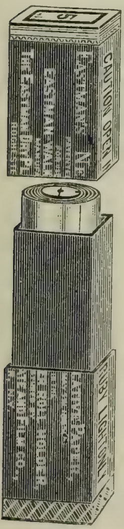

FIG. 3.

We have seen the development of the negatives carried on, and it presented no difficulties whatever, the usual alkaline developers with pyro being used. One advantage of these paper negatives is that a number of them can be developed in the same dish together, like the toning of silver prints.

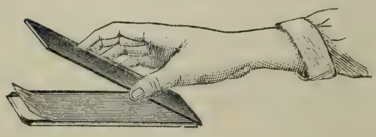

FIG. 4.

When developed, they are fixed exactly like glass negatives, and when dry they are made translucent by smearing them with castor-oil by means of a squeegee and rubbing it in with a hot clothes-iron.

The negatives thus produced can be finished in exactly the same manner as glass negatives, *i. e.*, retouched in every way.

The pictures produced by this process and exhibited at Buffalo were superior to anything in this line heretofore shown. The Eastman Dry Plate and Film Co., who are the manufacturers of the paper and roll-holder, recently received a medal for these wonderful improvements at the Inventions Exhibition in London.

We have seen the process used and have heard hosts of questions asked and answered successfully by the Eastman Company, and it appears to us that paper negatives have come to stay.

◆

THE EXHIBITION OF PICTURES AT BUFFALO.

SECOND NOTICE.

H. F. NEILSON, Niagara Falls, had a very large exhibit of photographs of the celebrated cataract. It is almost impossible to convey the impression to another which a sight of these wonderful pictures gives to one who sees them. The beauty of the light and shade, the exquisite depth and fine perspective, the sharp and clear outlines of the various views, were truly marvelous. One thing only marred some of the pictures, and this was the cloud effects. While the negative from which they were printed was evidently very beautiful, we could not help thinking that the printing was too prominent, and that much softer cloud effects would give these pictures a much more pleasing appearance.

Geo. Barker,* Niagara Falls, also showed a large collection of pictures, the most prominent of which were views of the cataract. These views varied from stereoscopic size to pictures 18x22. Every view that we saw showed much artistic taste in the selection of the point of prospect. Great care had been taken to secure a picture, not merely a photograph, of each scene; and doubtless much patient waiting and many hours of labor were expended to obtain the perfect gems which we saw of this wonderful waterfall. Perhaps the best we can say of this collection is, that *Harper's Weekly* was a few weeks ago illustrated with drawings from some of Mr. Barker's fine work. What we have said about cloud effects in the case of Mr. Neilson's pictures applies equally well here; they mar some otherwise exquisite work. In addition to the views of the Falls, the exhibit contained many pictures of other scenes, notably of Buffalo and the Hudson River, in which Mr. Barker showed the same skill in handling his subjects as he did in the case of Niagara.

At about this point in the exhibition was a small collection of pictures that interested us very much. These were the work of Mr. Kenney, of Hackettstown, New Jersey. They were made with the well known E. A. lens, and were some of the best work we have seen with this remarkable instrument. One group, upon an 8 x 10 plate, contained about 200 faces, and every one was perfect. This result seems almost incredible. Other groups were equally well done and quite wonderful in the effects obtained.

We must now pass to the grand exhibit of Mr. G. Cramer, of St. Louis. Here again artistic feeling was displayed in almost every picture exhibited. This exhibit grew steadily in favor with us, and we returned to it many times to enjoy its beauties. Here we found portraits and art studies of the first order. Nearly every portrait was good and thoroughly artistic; but one gem we shall never forget. This was a profile head, of life size, in a medallion setting. The beauty of this picture was most captivating; the beautiful effect of relief against a light background, the wonderful perfection of lighting, together with the charming pose, gave this picture an artistic character beyond description; it should be seen to be appreciated. Perhaps the great beauty of the subject had much to do with the remarkable charm of the portrait; but beyond this the artist evidently did his best to bring out the most artistic features. That face will live in our memory for many a day.

The other pictures were also very finely done. The happy, home-like feeling in the group of Mr. Cramer's family was beautifully caught in the large picture exhibited; while a portrait of a lady with a fan, against a black background, was most effective. A number of studies of domestic and other scenes, showed many charming artistic effects. Several interiors, with scenes in a kitchen, were very happy, notably "Home Duties." We were also much pleased with the capital picture entitled "The Tease," where a boy is worrying a little girl on some steps by blowing in her ear with a fish-horn; the mischief in the boy's face, and the unhappiness of the girl, are very well caught. Altogether, Mr. Cramer's exhibit was wonderfully fine.

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* We are indebted to Mr. Barker for the use of his dark room during our stay at Niagara. It was a great convenience, and we tender him our best thanks.

Dr. E. L. Wilson, Philadelphia, showed a number of fine interiors of the New Orleans Exhibition. These were remarkably good pictures of some very difficult subjects.

Wardlaw & Learned showed a number of fine portraits, the best of which were a lady with hat and an elderly gentleman. They also showed a frame of beautiful cabinets. A couple of gems of landscape work also caught our eye. These were an old wheel and foliage covered with snow, and a study of foliage. Both these pictures were highly artistic and beautifully taken.

Moreno & Lopez exhibited a number of fine portraits and artistic studies. A little girl with hands clasped pleased us most, the posing and the background effects giving the picture a very beautiful appearance. We should like to have seen more pictures in this exhibit; the few presented showed much artistic taste.

W. J. Baker, Buffalo, N. Y., had a fine exhibit of life-size portraits, cabinets and panels. A bust picture of a girl with a hat on, against a dark background, was very effective; and also one of a gentleman with a similar treatment; both portraits being very artistic.

F. J. Haynes, of Fargo, Dak. T., exhibited some exceedingly beautiful views of western scenery, notably in the Yellowstone Park and Geyser region. These should be seen to be appreciated; they were simply grand and finely finished.

The Photo-Gravure Company, of New York, had a small but very good exhibit of their work. We noted some very fine views of interiors of Columbia College library, and also of the buildings. We gave our readers an example of this company's work in an illustration of Mr. Spaulding's prize print some months ago. We are surprised that this company did not make a larger exhibit of their truly beautiful work.

W. H. Potter, of Indianapolis, had a number of beautifully artistic studies. We noted two pictures among those of this collection that appeared to us strikingly beautiful. One of these was an interior, with a lady at a window, in which the pose was excellent and the lighting singularly perfect. Another was a lady with a fan behind her head, against a black background, which gave a very fine effect.

D. R. Clark, of Indianapolis, showed some finely finished portraits of some notable men. Among these we found a life-size head of Vice-President Hendricks, and one of Governor Porter. We also noted a very fine family group in this exhibit. There was something particularly artistic about the portraits of this exhibit, principally owing to the fine management of the backgrounds and the lighting.

Mr. Guerin, of St. Louis, had a fine exhibit, the gem of which was a reclining figure, against a black background. One thing only marred the beauty of this picture, and that was an object on the left-hand side, which looked something like a door post. With this taken out, the whole figure was truly beautiful and very artistically arranged

Mr. James Landy, of Cincinnati, had one of the most artistically arranged collections of pictures in the whole exhibition. The pictures were arranged against an olive-colored background, which was mounted with "old gold" trimming, so as to resemble a large picture frame; and the whole effect was very artistic. In regard to the pictures themselves, they were all of the highest character. Two interiors were the best exhibited at Buffalo, the management of the lighting and the perfection of the detail in every part of the pictures were simply marvelous. We also noted some exquisite portraits, and amongst them a girl with bonnet on struck us as particularly pretty. The lighting was perfect and the pose very artistic. There were several studies exhibited in this collection, and those of the witch scenes were particularly good. The expressions on the faces were truly wonderful and very perfectly caught.

Walter C. North, of Utica, N. Y., exhibited a sort of mosaic frame of children's pictures of the first order. It was very fascinating to look at, and is one of the best collections of children's pictures we have seen.

McCrary & Branson, of Knoxville, Tenn., also had a fine exhibit of children's pictures. Their work was particularly good and perfect.

W. H. Kent, of Rochester, showed a large number of fine pictures to illustrate the use of the new paper negative process. There was always artistic work in these pictures, and the softness of the work was very beautiful in the effects it produced. We have never seen anything to compare with it for large pictures, the entire absence of harshness in the outlines being so perfectly true to nature that the features produced are singularly life-like. Two pictures impressed us more than the rest of the exhibit. One of these was a full-length figure of a lady in white drapery, which was beautifully taken; the pose and the drapery were uncommonly graceful. The other picture was a half-length figure of a boy with a soft hat on. In this last, the picture showed in a most striking manner the softness we have mentioned above; the hat in the picture looked like the felt of which the original was made.

Edy Brothers, of London, Ontario, Canada, had a collection of large portraits, that were finely finished and remarkable for their pleasant tones.

Alman, of New York, had an exhibit of children's pictures, showing effects of a very happy order, and characteristic of the artist. The pictures were little beauties, every one.

We must stop here and give our impressions of the beautiful foreign exhibit in our next issue.

THE EXHIBIT OF PHOTOGRAPHIC APPARATUS AT BUFFALO.

SECOND NOTICE.

THE *Scovill Manufacturing Company* had a large exhibit of the goods and apparatus in which they deal, which included cameras, tripods and other photographic appurtenances, photographic glass and lenses.

The Rochester Optical Company had a large exhibit of their apparatus. We noted a novelty in a peculiar catch to secure the ground glass and plateholders to the back of camera; it is difficult to describe, but is quite ingenious.

Mr. Entrekin had a truly handsome exhibit of his burnishers. The beautiful finish of these machines was notable. His experience in the manufacture of these necessary adjuncts to every studio has called forth continued improvement, and the work exhibited at Buffalo deserves the highest praise for beauty of design and finish. A number of duplicating print cutters were exhibited, and much admired for their utility.

B. French & Co., Boston, Mass., had a large exhibit of Voigtlander and Darlot lenses. As a novelty, they showed a new form of the Euroscope lens with a long focus, for which they claimed more brilliant effects.

A. M. Collins, Son & Co., of Philadelphia, had a most extensive exhibit of their well-known card stock. It is almost impossible to give an intelligent account of the endless variety of beautiful designs in cards and mounts showed by this firm. Among a few of the novelties we may mention the new Drum Panels. These are really very thick panels of various forms, but are quite light from being made hollow. At first sight one would imagine they were pieces of wood, but on handling the illusion is dispelled, owing to their lightness. Another novelty is a new mount with serrated edges, giving the appearance of a card that has been roughly torn into shape. This design is very unique, and gives a pleasing appearance. Various novel designs in medallion and easel panels were also exhibited.

Buchanan, Smedley & Bromley, of Philadelphia, had a large exhibit of the platinotype and its results. The results obtained by this process were very beautiful, and remarkably artistic in their character.

The Mallinkrodt Chemical Works, St. Louis, had a large exhibit of fine specimens of their products. We did not notice anything specially new in this exhibit. It was arranged with good taste, and looked handsome.

Smith & Pattison, Chicago, exhibited their well-known revolving show cases, which attracted considerable attention. The latest form of Baldwin's Baby-Holder, the Duplex Rotary Polisher and Magic Camera Stand, No. 2, were among the novelties. A new posing chair, with removable arm and back-rest, was also shown, and is a very desirable piece of studio furniture.

The Toledo Moulding Company had an exhibit of frames in almost endless variety. The work was well finished and the designs artistic.

Schindler had a large exhibit of accessories. Plaster combination backgrounds, revolving album on stand, and a new form of posing chair, called the "Elite," were among the novelties.

The American Albumen Co. had a fine exhibit of work done upon their paper. It is impossible to give an impression of work of this character, yet we should say that the results shown were highly satisfactory.

W. H. Walmsley & Co., Philadelphia, exhibited a number of novelties, among which we noted a shutter designed after the English shutter on the "Instantograph" camera, and it appeared very effective, but rather heavy for its size. This firm also has a photo-micrographic outfit, which has been designed by Mr. W. H. Walmsley, who is a veteran microscopist of the first order, and has produced some of the best work of this kind we have ever seen.

J. C. Somerville, of St. Louis, had a fine exhibit of his goods, among which we noted a very good posing chair, having many advantages over those in general use. It should be seen to be appreciated.

The Seed Dry Plate Co. had a large exhibit of work done on their plates. Among the pictures shown we noted the work of Falk, of New York, which showed some very artistic effects due to posing and a happy management of the lighting. Also pictures by Alman, and Moreno & Lopez, of New York, the work of each being characterized by individual artistic effects of the first order.

John Carbutt had a very handsome exhibit of work done on his plates, and we were surprised that it was so small in amount. We expected to see more pictures from the negatives of this veteran plate maker. What were shown were beautiful and artistic.

Geo. Murphy, of New York, had a very tasteful exhibit of the materials of both wet and dry plate photography. The accessories shown in this exhibit were artistic and effective.

Allen Bros. had a number of pictures showing the work of the Suter lenses; these included fine portraits, interiors, and views. Some of the interiors were taken at the New Orleans Exhibition, and were quite good considering the difficulties of the circumstances.

G. Cramer, of St. Louis, had a fine exhibit of all sizes of his well known plates. His pictures are noticed elsewhere.

L. W. Seavey, of New York, had a very large collection of backgrounds and such like accessories for the studio. The designs of these were unique and very artistic; while the means of adaptation to different circumstances were very ingenious. Here were also exhibited those ingenious glass foregrounds made under Moreno's patent, for producing the cloud and other illusions which are so effective in some pictures. Altogether this was a most interesting exhibit, and well repaid those who spent time examining its many good parts.

J. W. Bryant, of La Porte, Indiana, had quite as effective an exhibit of studio accessories as the foregoing. In this collection we noticed the use of high relief decoration to produce some very artistic effects in the backgrounds. The whole exhibit was well displayed, and showed great artistic taste in the designs.

W. T. Ashe, of New York, had a very handsome collection of finely painted backgrounds and like accessories. The work was artistically executed and very effective in the designs shown.

Knapp & Caldwell, of New Jersey, had a very good exhibit of high relief designs for accessories, which were quite artistic.

Lehman & Brown, of New York, exhibited a number of rugs and draperies for studios; the designs were fine.

Wm. Eckhardt, of Baltimore, exhibited a large number of fine mouldings and picture frames with handsome designs.

Perrigo & Faupel, of Baltimore, showed a great variety of bevel and fancy mats of very artistic design.

The Eastman Dry Plate and Film Co.'s exhibit is noticed elsewhere.

Amongst the minor novelties we noted *The Benster Shutter*, which is virtually a diaphragm, which is adjustable, and an instantaneous shutter combined. It is constructed upon the same principle as the iris diaphragm used in microscopes, and is very ingenious. The number of thin pieces of metal of which it is composed, and the constant friction to which they are subjected in using the shutter, appear to us to be a serious defect, and would lead to an early derangement of the apparatus; but we were assured that our fears were without foundation.

Several retouching machines were exhibited, but we could not find time to examine them.

The Acme Water Colors for photo-coloring were shown in a very effective exhibit of work done with them. We could only give a passing glance at these, but the results shown were very handsome.

We also noted a *Solar Camera*, with self-acting reflector and vignetter, made by H. A. W. Brown, of Indiana, which it is claimed will print pictures with a nine-inch condensing lens 8 x 10 to 30 x 40, as good as by contact. The whole apparatus looks reasonable, and is doubtless effective.

We have thus endeavored to give our readers an idea of what was to be seen at the Buffalo Exhibition. We do not claim to have noted everything that was shown, but we believe there was little left that we did not see and have not spoken of.

DETECTIVE CAPTURES.

We have just received from Dr. E. L. Wilson, of Philadelphia, a couple of transparencies made from negatives taken with the Detective Camera in New Orleans. One of these is a fawn catching a fly on its mother's heel, and the other is a mule reaching for a fly on his own neck as he is trotting along with his companion. Dr. Wilson says: "If I had the camera again, I would get you something better, for I know how to use it now."

We think he has done remarkably well, and shall prize the pictures he has sent; they are wonderfully good. This is a new mode of catching flies.

ON DEVELOPERS.*

BY W. K. BURTON.

It is difficult to write anything particularly, or even at all, on such a subject as "Development." However, what I am about to write may, I hope, be of some little use, inasmuch as the subject, however hackneyed, must remain of interest to all photographers, and, if I have nothing new myself to tell, my paper may be the means of bringing out new and useful matter in discussions.

I have defined development in photography as the strengthening of an image made by light. There are, of course, processes for which this definition will not hold good, such as the bitumen process of Nicephore Niepcé, and the carbon process, wherein development consists, so to speak, of "disentangling" an image of full intensity from a superfluity of the material from which it is composed.

The development of a daguerreotype plate is typical of development by merely *strengthening* an image. As all know, the daguerreotype film consists of pure iodide of silver or of a mixture of iodide and other haloids. As to what the latent image consists of, that is a question I am not prepared to enter into at present. It is, however, certainly there in some form before development, and is during development strengthened by piling minute globules of mercury on to it.

The development of a salt is precisely analogous to the action thus described. The developer has the effect of reducing the nitrate of silver in the bath solution, which adheres to the film, to metallic silver in a minute state of division, and this metallic silver deposits itself on the latent image, which is probably of the same nature as that of the daguerreotype plate.

The action of the now universally used alkaline developer is quite different from this in one respect. There is no free silver nitrate present in the film to which it is applied, and it has to act by reducing the actual haloid to a metallic form. For a long time it was stated that it was impossible to develop an image in silver without the presence of free silver nitrate, and the announcement, in 1861, that this thing was possible, was hailed with derision.

By reference to the *Photographic News* of 1861 (page 518), I find Mr. Wharton Simpson describing a set of experiments which he had made in the direction indicated. He took a bath plate, washed it very thoroughly, dipped it for a quarter of an hour in a strong solution of chloride of ammonium to remove any trace of free silver nitrate which might remain after the washing, washed it again, and was then able, after exposure, to develop an image with a solution of pyro. In this little experiment may be said to be the germ which has rendered the rapid dry plate of photography of to-day a possibility. It is only fair to say that Mr. Simpson's experiments were performed merely to verify a statement made by Mr. J. Mudd, who, in turn, gave all credit for this discovery to Mr. Wardley.

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*For this, and the following article by Mr. Bolton, we are indebted to J. Traill Taylor, Esq., to whom the papers were sent too late to be read at the Buffalo Convention.—Eds. of Bulletin.

Mr. Simpson, in his experiments, speaks of no addition of an alkali to the pyrogallol solution ; indeed, indicates that there was no such addition ; but it is probable that the solution was not quite neutral. Captain Abney recently stated that it was impossible to reduce a film of silver bromide by an absolutely neutral solution of pyrogallol, and I have, by an experiment, corroborated this. In any case, it was but a short time after Mr. Simpson's experiment was performed that the desirability of using an alkaline solution was established.

The alkaline developer, consisting of a solution of pyrogallol, rendered alkaline with an alkaline carbonate or a caustic alkali, with, generally, the addition of some neutral salt, which acts as a restrainer, has had but one formidable rival to this day. The rival to which I refer is the organic iron developer discovered by Mr. Carey Lea in 1877. In that year Mr. Lea announced that various organic salts of iron acted, in a neutral state, as powerful developers of the silver haloids. Of the salts which Mr. Lea mentioned eight years ago, only one has come into at all general use as a developer for dry plates. Others are, it is true, used for developing gelatino-chloride films, either on paper or on glass, to produce transparencies and prints ; but ferrous oxalate is the only iron developer which is at all extensively used for bromide of silver.

I do not know to what degree of popularity ferrous oxalate has attained in America; but, to judge from the American periodicals, I imagine that there is not much difference in the particular point in question between those on the two sides of the Atlantic. Here, at any rate, there are very few to be found to recommend the use of ferrous oxalate in preference to alkaline pyro in practical work. For my own part, I am very decidedly in favor of the alkaline pyro. I believe that the reason why some prefer oxalate, and prefer to add certain salts to the alkaline developer, is because they make it their first—or, at any rate, one of their first—objects, to get a "pretty negative." It only needs to be stated, to be admitted, that the object in using a plate is not to get a pretty negative, but to get a negative from which we can get a pretty print. Now, it is certain that a pretty print does not of necessity follow from a pretty negative. Nay, I will go farther than this, and will say that the best possible print with gelatine plates is never got from a very pretty negative; that a negative with an image tending to green, or even to greenish-brown or yellow—not excessively so tending—will give a better print than a negative showing a pure black image; but more of this anon.

I may say that I have tried the substances which have been recently suggested as substitutes for pyrogallol—hydrokinone and hydrochlorate of hydroxylamine—but have found them to give results decidedly inferior to our old friend pyro.

Granted that pyro forms the most suitable developer for our modern plates, the next question which arises is, what alkali are we to use with it? On this side of the Atlantic we have clung with remarkable tenacity to caustic ammonia. Our developers have for the last few years consisted of mixtures in various proportions of the pyrogallol, caustic ammonia and a soluble bromide—generally bromide of ammonia—and water.

There has been no change in the substances used, but in the proportion in which they have been used there has been great variety, as also in the subsidiary substance used to prevent the pyro from turning very brown in an aqueous solution. Even greater, perhaps, has been the variety of manners in which different plate makers have continued to make confusion worse confounded by the extraordinary manner in which they have stated the formulas that they recommend. Each maker appears to be vying with his neighbor in the task of making it as difficult as possible for the user of the plates to know in what proportion the ingredients of the developer are present in the solutions actually poured over the plate.

Pyro with caustic ammonia being *the* developer in this country, I, some few months ago, carried out a series of experiments with the view of discovering what relative proportions of the three materials mentioned would give the best results in actual practice. The experiments were described in the *British Journal of Photography*. The following is an abstract of the descriptions there given:

"Forty-eight plates were exposed under a standard sensitometer screen. The exposures were made at three feet from a duplex paraffine lamp, each lasting for twenty seconds. As the experiments were intended to be comparative merely, it was not necessary to use the phosphorescent tablet. As all the exposures were made within an hour, it may be assumed that no appreciable variation in the intensity of the light took place, and, as a matter of fact, a plate exposed before those to be used for experiments, and another after, showed no appreciable difference when developed side by side.

"My object was to develop these plates, each with a different developer, so that there should be one developed by each of all the variously proportioned developers commonly in use.

"The annexed table will give an idea of the variations which existed between the various ingredients :

TABLE No. 1.

	HALF GRAIN PYRO.			
	Quarter grain bromide of ammonia.	Half grain bromide of ammonia.	One grain bromide of ammonia.	Two grains bromide of ammonia.
Half minim ammonia....	1	2	3	4
One minim ammonia....	5	6	7	8
Two minims ammonia...	9	10	11	12
Four minims ammonia...	13	14	15	16

TABLE No. 2.

	ONE GRAIN PYRO.			
	Quarter grain bromide of ammonia.	Half grain bromide of ammonia.	One grain bromide of ammonia.	Two grains bromide of ammonia.
Half minim ammonia....	17	18	19	20
One minim ammonia....	21	22	23	24
Two minims ammonia...	25	26	27	28
Four minims ammonia...	29	30	31	32

TABLE No. 3.

	TWO GRAINS PYRO.			
	Quarter grain bromide of ammonia.	Half grain bromide of ammonia.	One grain bromide of ammonia.	Two grains bromide of ammonia.
Half minim ammonia....	33	34	35	36
One minim ammonia....	37	38	39	40
Two minims ammonia...	41	42	43	44
Four minims ammonia...	45	46	47	48

"The quantities are in the somewhat unscientific form of grains to the ounce. It will be seen that pyro was used in quantities from half a grain to two grains, ammonia from half a minim to four minims, and bromide from a quarter of a grain to two grains.

"I do not profess to have observed any very refined degree of accuracy in the experiments. I have, however, kept well within the degree of accuracy commonly observed by photographers. That is to say, I have employed, with care, the usual druggists' scales and weights and the ordinary glass measures.

"The pyro was not made up with any preservative, lest such, acting as a restrainer, should disturb the results. A four-grain solution in distilled water was made immediately before commencing the experiments.

"The ammonia solution was used in the form of one part of commercial .88 ammonia to nine parts of water, the ammonia bromide in the form of a ten per cent. solution. When very small quantities were to be measured out, each of those solutions was first diluted in considerable quantity to one-tenth of its strength.

"In mixing each developer, solutions containing twice the quantities marked in this table were poured into a glass measure, and the whole was made up to two ounces.

"I imagine that no one will have any difficulty in understanding the tables; but, lest he have, I give an example:

"If we take No. 24, we find at the head of the table No. 2, in which it is, '1 grain pyro.' At the beginning of the line in which it is, we find '1 minim ammonia,' and at the head of the column in which it is, we find '2 grains bromide of ammonia.' This means that plate No. 24 was developed with a solution containing 1 grain pyro, 1 minim ammonia, and 2 grains bromide of ammonia in each ounce.

"In making a series of experiments with various developers, it is, of course, necessary to determine what shall be the limit of development. A time limit would be by far the easiest to work with, but I cannot see that any useful results would come from experiments performed with such a limit. For example, suppose a limit of four minutes were taken, that is to say that each plate was to be developed for four minutes. At the end of that time a developer which at the end of ten minutes would have produced a better result than another in four minutes, might at the end of four minutes have shown scarcely any result at all; while another, which would show an excellent result at the end of two minutes, might have entirely destroyed the plate by the end of four.

"On thinking this matter over, it appeared to me that were it practicable, the best limit would be one of *density*. That is to say, that each developer should be allowed to act till it showed the first square of the sensitometer tablet of a certain fixed density, which should be about the greatest wished for in ordinary negatives. According, then, to the highest number visible, and the clearness or the reverse of the unexposed parts of the plates, would the developer be judged.

"Although this criterion of density appeared to me by far the best one, I gave it up as impracticable. The judgment of density is at all times a very difficult matter, and, moreover, inaccuracies are liable to be introduced by variations in the thickness of the film.

"I decided, therefore, on a less scientific, but more practicable limit. I developed in each case either until the developer appeared to have long ceased to produce any further change on the plate or until fog became apparent. As life is short, I had to set besides this *some* time limit to the experiments. I therefore fixed the maximum time of development in any circumstance at half an hour. This I considered to be as long as it was likely that any development should be continued in practice.

"The plates used were of commercial make. The brand is fairly rapid, and in ordinary working gives very brilliant negatives, with exceedingly clear shadows.

"The difference in result produced by developers containing extremely different quantities of the ingredients, is less than I should have expected. Thus, a developer containing in each ounce half a grain pyro, half a minim ammonia and two grains bromide, which I should have expected to show scarcely any trace of image, shows one with the first few figures of great density, and shows only eight figures of the sensitometer less than one containing two grains pyro, four minims ammonia and a quarter grain bromide."

Increase of pyro has, as might be expected, wrought increase of density. Increase of ammonia, when accompanied by increase of bromide, has had the same result, but without increase of bromide, has resulted, as a rule, in *decrease* of density. Increase of ammonia has also resulted in increase of detail up to a certain point, after which, except when increase of bromide has accompanied it, actual falling off in detail has accompanied the increase of alkali.

The following is the result of taking "averages" from the reading of the different plates:

"The average of the highest figures of all the plates developed by the developer's table No. 1 is 20.81. In table No. 2 it is 20.80. In table No. 3, 21.56.

"It will be seen here that there is really very little difference between the average figures got from the three tables. That is to say, that the result of altering the quantity of pyro is neither to increase nor to decrease detail to an appreciable extent. It has, however, as I have already said, when increased, the effect of causing development to take considerably longer. In other words, pyro acts as a retarder, not as a restrainer. My impression on first looking at the plates was that those developed with the larger quantities of pyro showed a little less detail than the others; but this general impression is shown by the precise figures given to have been wrong.

"The other averages that I have worked out are not the results of the one of absolute quantities of ammonia and bromide, but of relative quantities. Thus, I have taken all plates developed with ammonia and bromide in equal quantities of ammonia and bromide in the ratio of two to one, and so forth. The results are as follows:

"With bromide 4, ammonia 1, the average figure is 17.66. With bromide 2, ammonia 1, it is 19. With bromide and ammonia equal, it is 20.66. With bromide 1, ammonia 2, it is 21.72. With bromide 1, ammonia 4, it is 22.23. With bromide 1, ammonia 8, it is 22.16. With bromide 1, ammonia 16, it is 21.33."

It will be seen that here detail increases very decidedly till the ratio of ammonia to bromide becomes as 2 to 1. It then farther increases slightly between that ratio and the next, namely, 4 to 1, after which it falls off with farther relative increase of ammonia.

It will, of course, be understood that the figures given are relative, not absolute. Thus, under "ammonia 1, bromide 2," are included plates developed with quarter grain bromide and half minim ammonia, those with half grain bromide and one minim ammonia, those with one grain bromide and two minims ammonia, and those with two grains of bromide and four minims ammonia.

The total increase by altering the ratios of bromide to ammonia from four bromide to one ammonia, to one bromide four ammonia, will be seen to be less than five figures. Certainly an amount of compensation for over-exposure—which the thing practically resolves itself into—less than I should have expected.

"Having got out out so much more than I expected by developers when the ratio of bromide was so high as compared with ammonia, I tried the effect of developing for a great length of time with the following somewhat peculiarly constituted developer:

Pyro	¼ grain.
Bromide	4 grains.
Ammonia	½ minim.
Water	up to 1 ounce.

This developer was allowed to act for the whole night on a plate exposed with the others, at the end of which time the figure 20 was visible, and the density was ample, although the image was of a peculiar orange-brown color."

You in America have led the way in the adoption in practice of various alkalies, besides the caustic ammonia, still, as I have said, almost universally used here. I tried a set of experiments some time ago, using caustic soda, caustic ammonia, caustic potash, and the three corresponding carbonates.

I failed to perceive any particular advantage in either the caustic potash or the caustic soda. In fact, after giving a very fair trial with various brands of plates, I concluded that, if a caustic alkali is to be used, it had better be our old friend, ammonia.

The carbonates, on the other hand, offer, in my experience, a very great advantage for certain work. It is more easy by their use to get density or flush than with ammonia. On the other hand, they are considerably slower in their action. One, for example, who has been accustomed to the use of ammonia, and who adopts carbonate of ammonia, is likely at first to conclude that from the carbonate no good will come at all; by the time that development would have been complete with ammonia, the carbonate has produced only a thin phantom image of the highest lights of the picture. It is, however, extraordinary how steadily density continues to increase with the carbonate, till before long it has become greater than could have been got with ammonia through any length of time.

Of course, in many cases, it is no advantage to be able to gain excessive density. For example, where slow plates are used on landscape subjects, and in portraiture with suitable plates, density is, as a rule, gained with the greatest care, using ammonia, and I can see no particular use in replacing it with the carbonate. It is when we have to use plates of excessive rapidity, for instantaneous and other work, when, as all know, the difficulty in getting density is usually the greatest we have to contend with, and when subjects deficient in contrast have to be treated, that the carbonates become useful.

The following are he relative quantities of the three carbonates mentioned which are necessary to produce solutions of the same alkalinity:

Sodium carbonate (cryst. as washing soda)	1.0
Potassium carbonate (cryst.)	6.1
Ammonia carbonate	3.36

Using of the washing soda 25 grains to the ounce, and of the other carbonates quantities giving the same alkalinity to the solution, I found sodium carbonate to be considerably the most rapid in its action, next to it potassium carbonate, and slowest of all ammonium carbonate. That is to say, using in each case no restrainer at all. The ultimate density which could be gained I found to be inversely as the rapidity of development. That is to say, the slow carbonate of ammonia would, if time was allowed, give a denser image than any of the others. For this reason I prefer to use it when I use a carbonate at all. That is to say, when I know that with ammonia there will be difficulty in getting density.

I fear that I am making a statement which will appear heretical to some of you, when I say that I can recognize no advantage arising from the use of any additions to the developer beyond the simple pyro and carbonate of ammonia, except such small quantity of acid as may be necessary in the pyro stock solutions to preserve it.

It is true that by using sulphite of soda, sulphurous acid, or one of the various other substances which have been from time to time recommended, I might be able to dispense with the alum bath ; but I very considerably prefer the slightly greenish image got by the use of the simple pyro and carbonate developer, followed by the alum bath, to the pure black image got when sulphite is used. As I have said, I believe a better print is got, and one reason of this is, I believe, that without the sulphite a greater range of light is correctly registered on the film.

If I cannot hope to have brought before you any matter which is at all new, I hope that I have at least fulfilled *wo* conditions which, I believe, attach to the production of a paper for you : that it be of a practical nature and be brief.

COLLODIO-GELATINE DRY PLATES.

BY W. B. BOLTON.

As an honorary member of your Association, I find it difficult to refuse the request of my old friend, Mr. J. Traill Taylor, that I would contribute a paper to the 1885 Convention. At the same time, I find a still greater difficulty in selecting a subject that is likely to interest you, more especially as my connection with the practical side of photography is rather that of an amateur, while the majority of the members of the Photographers' Association of America are, I suppose, professionals. However, as the task has to be performed, I must throw myself on your indulgence and *faut de mieux*, will select a subject which has recently formed the basis of some experiments on this side, namely, Collodio-Gelatine Dry Plates.

I may commence by promising you that I am not going to attempt to persuade you to give up gelatine plates for the sake of preparing and using a hybrid description of article, the advantages of which are probably still in dispute. Such is certainly not my intention, for I feel certain that in America, as elsewhere, gelatine has gained so firm a hold upon the public, that we may expect it to retain the premier position for at least as long a period as the old wet process did. But while I hold the belief in the present supremacy of gelatine, I have little doubt but that in America, as in Britain, there are many who still continue to employ the old bath for certain purposes, and who will probably go on doing so to the end of the chapter. My object in writing these lines is, therefore, to direct your attention to the possibility, under special circumstances, of so combining the old and the new methods, that convenience of the one and rapidity of the other may be, in a great measure, brought into conjunction. In other words, I wish to show you how it is possible that peculiar conditions may arise under which a collodion plate prepared on the spot, or at least by the operator himself, may be a necessity, and further, how the rapidity of such a plate may be brought within measurable distance of the modern dry plate.

It is not my intention to occupy your time with the working details of the proposed process—those will be found dealt with in the photographic journals—but merely to point out its applications. Suffice it to say here that the principle of the thing rests simply in treating an ordinary washed bath plate with an organifier or accelerator, consisting of a rapid gelatine emulsion, and either drying it or not before exposure as circumstances may require. For this purpose the plate is collodionized and silvered in the usual manner and then carefully washed to remove the excess of nitrate of silver. The drained surface is next coated with a gelatine emulsion made in the ordinary manner, though it is scarcely necessary to be so particular in the manipulation as when the emulsion is to be applied to bare glass, or to seek to attain so high a degree of sensitiveness as that given by the best commercial plates. The sensitive collodion film acts as an absorbent substratum, which keeps the gelatine on the plate and prevents blistering and frilling ; it also prevents the crystallization of salts by decomposition formed in the emulsion, and thus, in a great measure, enables us to dispense with the troublesome operation of washing to insure their removal. An emulsion which may be easily made in an hour—and which, with a suitable addition of alcohol or other antiseptic, will keep for weeks or months—and the ordinary wet plate "fixings," still to be found in most studios, are all that are required to produce plates which, if they do not possess all the rapidity of the best commercial ones, are far more rapid than collodion, while possessing most of the peculiarities and advantages of the latter.

Now, as to the uses of such plates. Of course, I know, in America no artist ever runs out of plates suddenly, though I have heard of such instances in England, where you can send the boy round the corner and have a fresh stock in five minutes. But the American artist, if he is up to his business, knows well that the sitter will not wait, nor the child retain its sweetness of temper during the time required to send round to the nearest stock house, a few hundred miles away, perhaps, so he behaves differently. But if an accident *should* happen. as they will occasionally in the best regulated establishments, drag out the bath, warm up the emulsion, and before baby has put on his first frown you are ready for him.

Then again you may experience a sudden demand for a plate of unaccustomed or unusual size ; or you may find yourself compelled to do some viewing away from home and on plates that are not your gallery size. Rather than drag both bottles and tent with you, you will find it to your interest to leave them at home and just take with you a few collodio-gelatine plates.

For copying and enlarging purposes the compound films give far better results than any of the ordinary gelatino-bromide plates, or even than gelatine films specially prepared for copying purposes ; while for lantern transparencies, or transparencies for decorative purposes, nothing can surpass them either in quality or convenience. But perhaps the most useful application which the professional artist will find for collodio-gelatine plates will be the making of opal enlargements; here it is possible to secure all the tone and quality usual with a pyro developed bath plate as well as *nearly* the rapidity of gelatine. If you do not mind the trouble of making a special collodio-bromide emulsion to use instead of the bath and collodion, you will get *far better* tones than with the bath and just as much rapidity.

But it is useless to go on pointing out possible applications; those I have named are a few which are practically useful, and no doubt others will suggest themselves as necessity arises. In throwing out the hint, I trust it may be useful to some one at least of the members of the Photographers' Association of America, to whom I need scarcely apologize for the brevity of this communication, since I have little doubt there will be plenty of more valuable matter to occupy their meetings.

PICTURES OF GEN. GRANT'S FUNERAL.

THE well-known photographer and Secretary of the Photo Section of the American Institute, Mr. O. G. Mason, of Bellevue Hospital, has taken some very fine instantaneous pictures of the funeral procession of Gen. Grant, which are at our office, and can be seen by any of our friends who wish to look at them. Mr. Mason's reputation as a photographer is too well known for us to speak of him in other than the highest terms, and his remarks about these fine pictures will prove interesting to our readers; we, therefore, give his letter below:

To the Editors of the BULLETIN:

Enclosed with this I send proof prints from the 11 x 14 Stanley plates, which I used on Fifth avenue during the passage of the funeral cortege of General Grant. As shown by the shadows of objects, it will be seen that the views were looking directly toward the south, and the time near the middle of the day.

The lens used was a twelve-inch focus "Rectilinear Universal," diaphragm F/16, with sliding shutter, accelerated by two strong rubber bands, giving an estimated exposure of 1/65 second.

No extra precautions were taken in development. Croton water, at the running temperature, was used in all the manipulations, without the slightest tendency to frill.

Simple pyro and soda developer—known as the "Standard." Bromide restrainer was required on all, except number three. You will observe that plate number three—exposed at 10.55 A. M.—shows no shadows on the street or sidewalk pavements, the sun being clouded in at the moment of exposure. My anxiety to get a picture of that division—United States Marines—led me to make the trial, and I think you will agree with me in saying that the result is remarkable.

Plate number one—General Hancock and Staff—was exposed at 10.40; others followed at intervals of five minutes.

The plate of the funeral car, with horses, guard, carriages, etc., was exposed at 2.05 P. M., when the direction of light was parallel with the avenue and directly in front of camera, a condition most unfavorable to good results.

My experience with the Stanley plates on August 8th, and on the recent field-day of the Photographic Section of the Institute, has convinced me that they are fully equal to all that has been claimed for them.

Most respectfully yours,
O. G. MASON.

BELLEVUE HOSPITAL, New York City, September 3, 1885.

ABOUT THE CINCINNATI CONVENTION.

CLEVELAND, O., August 11, 1885.

To the Editors ANTHONY'S BULLETIN:

I HAD thought to make a statement in the matter of charges made against the Executive Committee at the next convention, when the Investigating Committee should report, but do not feel like waiting so long a time, and ask you to give publicity to my showing.

The charge, as I understand, is the serious one of misappropriating money.

It is made against the Executive Committee.

The misappropriated (?) money was used in the payment of railway fares, hotel bills, and in a small way for time lost from business and home duties while in the service of the Association.

The Constitution says: "The Executive Committee, of which the President, Secretary and the Treasurer shall be members, shall have charge of the general business of the Association."

It does not say it shall be paid for its services, beyond the Secretary and Treasurer. It does not say it shall not be paid.

In the course of their duties, each member is required, when a meeting is called, to leave his own personal business, travel in some instances hundreds of miles, give several days' time and his best ability in arranging the business for a coming convention. During the year he is called upon to do much correspondence with other members of the committee, with stock dealers and manufacturers, and with members wanting information. In his own locality he must effect contracts with railways for special rates in carrying members to and from convention, and he must advise by circular all photographers within a radius of one to two hundred miles of such secured rates while urging their attendance.

He must write communications for the journals, urging and encouraging a large attendance.

When convention time comes he must be on hand in advance of the opening and must remain until after the close, during which time he must be in harness and at work.

The Executive Committee is empowered to make contracts, to employ help and to pay all expenses incident to holding conventions. It is competent to determine what are proper expenses.

It was the opinion of the Committee, when settling up the expenses and paying the bills for conventions at Milwaukee and at Cincinnati, that "the laborer was worthy of his hire"—a queer old notion indulged in by many.

It believed the success brought about through its efforts, which showed by a good balance in the treasury, justified the payment of that labor as a legitimate expense. So it did like men who had done good work and were entitled to pay, voted to each member not full compensation, but what would decently pay his expenses.

There was no reason why the committee should not do this, but good reason why it should.

In the past, when each convention held left the Association some hundreds or thousands in debt, it was more a work of patriotism, and the officers had naturally to be content with the distinction conferred.

In later years, when more enthusiasm has been manifest, and the Association abundantly able to pay, it is very proper it should be done.

The convention just closed has been a fine success in a pecuniary as well as an educational sense. The announcement is made that over $1,400 is in the treasury. The men who have been instrumental in making this fine success are entitled to compensation, at least in a sum sufficient to cover their expenses while in attendance at convention and performing the work of the Association.

The Association should not expect to secure competent and reliable service gratis. It is time this fact was recognized and acted upon.

Men may serve one year for glory, but are not willing to continue year after year on the same terms.

At present the Association is fortunate in being splendidly officered, and could hardly be in a more prosperous condition. That it continue so is my hearty wish. There is a way to keep it so, but it does not lie in the direction of piling up money and giving votes of thanks only for services.

Yours truly,

J. F. RYDER.

THE AMATEUR REPORTS.

Editors of ANTHONY'S PHOTO. BULLETIN:

MY DEAR SIRS,—I hope not to be classed among the chronic grumblers, when I say that I take the most emphatic exception to the report made of my remarks at the Society of Amateur Photographers of New York, June 19, and printed in the PHOTOGRAPHIC BULLETIN of August 8.

Upon page 465, the merest mention is made of "some experiments," and as I look at it the BULLETIN is printed for the information of people who, like myself, make use of photography as a pleasure or for information. The "some experiments" may be of very insignificant import to the reporter, or compiler of a report, but not so to the progressive amateur.

A member had some plates which had most peculiar markings, and he had others which showed curious little black markings—like a comet with nucleus and tail. During the discussion Mr. Newton spoke of undissolved pyro, and I then spoke in detail of such peculiar markings which I had found three years ago, and called upon Mr. Newton to examine the plates and see if, in the center of the black nucleus, he did not find a spot of clear glass. This is the substance of what occurred.

In some plates I was using in 1882 the same trouble was found, and on microscopic examination I found the center to show some matter I could not place, and a pretty plain-worded correspondence took place, in which the maker of the plate gave me some plain advice, and I suspect he had as plain words in advising him to learn how to make a plate, and not lay all to my ignorance in developing. Here the matter dropped for a while. Upon a subsequent visit to his shop we had a talk over the matter, and he told me that my theory was exactly correct, and he had guarded against any possibility of a recurrence, and told me quietly that he had learned the "developer theory did not cover *all* the facts."

Here was what happened: After the plates had been coated and placed on the benches of the drying boxes, a current of air was passed over or around them in order to carry off the water and cause them to dry evenly; and as this process was carried on for some hours a large quantity of air was passed over the plates. During this time more or less minute bodies, being living, were carried along and came in contact and imbedded in the gelatin. The plate dried and was packed, and came into the hands of an (ignorant amateur) enthusiast, who, when he had exposed and developed, was astonished, if not angered, by finding so-called "pinholes," to a greater or less extent, all over what he had expected to be a beautiful negative. And this is the way it occurred: The minute insect, or living body, when embedded in the gelatin was not perceptible, but being composed of materials capable of decomposition, was soon in that state; acidity was present, and more or less in extent, acording to the mass of the insect, did the gelatin immediately around it become affected. This made a most decided change in the character of the emulsion, so far as it was affected, first, by the chemical action of decomposition, and again by the chemical action of development, the *resultant* being a hole in the film as large as the body of the insect, and a black shaded effect radiating from the nucleus until the effect was lost and the film developed normally. Now some of the spots in the negatives shown had exactly this appearance to me on the evening of the meeting referred to.

Other spots have been found since the above occurred, and my microscope has settled some other important questions. The result has gone toward better plates and more comfort and certainty to the amateur, and some time, perhaps, we will discuss them.

Upon page 466, same issue, your report makes me say: "That of a dozen Cramer plates only five could be used in one box that he had opened." In answer to a member (as to some "wedge shape" and thick and thin plates, which had that very day been used by me in photo-micrographs, where the unevenness of the plate had prevented a clear negative), he asked me whose plates, and I answered him "Cramer's Yellow Label, 1610," but there is no mention of worse defects, which I mentioned of other makers' plates, such as substratum sliding out, or film cockling, etc.; not a word of this appears, nor does some interesting references made by your own Dr. Elliott, as to questions asked in reference to the Stanley plate and the necessity of using fresh hypo, etc., etc., appear in this so-called official report.

Now, while I do not wish to burden the BULLETIN with personal exceptions, I do take the strongest exception to such an allusion to the Cramer plate, while, as a matter of fact, the only trouble that I mentioned as to Mr. Cramer's work was a few ragged edge plates and some glass of uneven thickness, while very much worse faults were mentioned as found in other than Cramer plates, and the name of the plate given.

I am using, and have bought, over a gross of Cramer's 5 x 8, 8 x 10 and 11 x 14, since that meeting, of the yellow label, and I am using them for photo-micrographs and out-door work. If I used a "snap shutter," I might use others; but in any event, if reports of "some remarks" are to be made, or "some experiments," let them be judged by what is said, not by such garbled or inefficient work. My own purpose is to obtain information or, if possible, to give it, and nothing except facts need to be made use of; and I can honestly say that I have too much regard for the BULLETIN, its publishers, and its intelligent constituency, to see it made the vehicle of misrepresentation, either unintentionally or otherwise, for the large family of immatures who look to it for information of a *reliable* kind.

Truly,

THOS. PRAY, JR.

[We publish the reports as they are handed to us.—EDS. OF BULLETIN.]

* * *

AUG. 17, 1885.

I HAVE been taking the BULLETIN for two years and I like it very much.

WARREN H. DILLE.

FAMILY PORTRAITS.

Editors of the BULLETIN:

DEAR SIRS,—Something in Mr. J. L. Hurd's article on "Photographic Portraits *vs.* Camera Pictures," in August 8th number of the BULLETIN, appealed so strongly to our feelings, that I am impelled to write of it.

He says: "Think of it for a moment, the desire which is as old as the race, to behold the lineaments of those we love in their absence, or when that absence comes which shuts them forever from our sight, has had but meager gratification until within the memory of those now living. * * * * There have been miniatures on ivory and other substances, and silhouettes; and, in passing, let me say that the silhouette has a very pathetic significance, the almost universal presence in the humble homes of the English-speaking race. Of this, the crudest form of portraiture known to civilized man, voiced the cry of the multitude for a semblance of their friends."

Sitting under the sorrow of the loss of our only baby, we have—what we feel is a great satisfaction and pleasure—a number of photographs taken by myself for amusement as an amateur; and the expression of every sympathizing friend is: "You are fortunate in having so many pictures of her." In the current number of *Harper's Monthly*, in the reminiscences of General Grant, the expression is used, speaking of photography, "The practicers of that art, which is the chief solace of the vain." I can add, it is also a great solace of those bereft of loved ones, to say nothing of its many other sources of pleasure, and I would not, for many times what my whole efforts in photography have cost me, be deprived of the pictures of our little one, now parted from us for all time.

Yours respectfully,
J. C. PAYNE.

OBITUARY.

AUGUST SEMMINDINGER.

THIS well-known camera manufacturer was born in the city of Urach, Wurtemberg, Germany, on the 9th of April, 1820, and died at Fort Lee, New Jersey, on August 6, 1885. He was ever active in and out of business, being the medium of bringing about the founding of the German Hospital in New York City. He made a direct appeal to all Germans, irrespective of creed or sectional feeling, and the result was the raising of a fund of $30,000 to begin with. In political life he was very active both with pen and words in the abolition cause, being a member of one of the first organizations with such a tendency.

He came to America in 1849, owing to the Revolution of 1848 in the Old Country. He sought to employ his time in the same manner here as he had done in Switzerland, where he lived eleven years. He exhibited a small stock of Swiss fancy goods and finely-painted wares in the "Crystal Palace," New York, and lost all in the fire. Then he sought and found employment with our publishers, making photographic apparatus; and in 1859 he began business for himself at 159 Worth street. Then he moved to Elizabeth street, then to West Twenty-sixth street, and finally to Fort Lee in 1869. Several patents were issued to him for photographic apparatus.

He has six children living, four boys and two girls, who, with Mrs. Magdalena Semmindinger, are left to mourn his loss. Mrs. Semmindinger is the only daughter of Mr. Kintzie, of Berne, a well-known citizen of that old republic, and this fact accounts for her late husband's zeal and devotion to republican institutions, which he loved so much.

As a man, he was highly respected by both friend and foe.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

FOURTH DAY—MORNING SESSION.

THE PRESIDENT called the association to order at 10 A. M.

The *President*—The first business this morning will be the report of the committee. The committee on the matter referred to in the *Photographic Eye* now make their report.

Mr. INGLIS—Mr. President, ladies and gentlemen,—I have to report this: Your committee, upon looking into the causes bringing forth the item to which the attention of this convention was drawn in its morning session yesterday, which is as follows:

(The item was then read.)

Report that they find good grounds for the same, by the admission of two of the members of the Executive Committee of this association.

(Signed),
E. A. ATWATER,
JAMES INGLIS,
C. GENTILÉ.

Here are the books that have been handed over by our present secretary. Our present secretary, or the treasurer, cannot make either head or tale out of them, and if any one can do it I wish they would come forward and do it, or show how it can be done. I cannot make anything out of them either.

Then followed a long discussion about the financial management of the Executive Committee of the Cincinnati Convention. During this discussion it was brought out that the funds of the association had not been sufficiently accounted for, and that certain sums had been appropriated for purposes which were apparently in the interest of individual members, and not the association. As a result of this discussion, it was decided that the President appoint a committee of five members to investigate the transactions of the Executive Committee of the Cincinnati Convention, and that the report of this committee be published. The matter of the expenses of the investigation was left to the decision of the President.

The regular business then proceeded as follows :

The *President*—The next business in order will be the election of officers for the next year. I have a short motion to make before we proceed to the election of officers. It is this: I understand that there are a great many of the gentlemen who came here with the hope of seeing a demonstration of the greatest novelty in the photographic art—that is, the new film negative. Many of them are very much disappointed with what they have seen. Since it is a matter of interest, I move that at three o'clock this afternoon we invite Mr. Cooper, of the Eastman Dry Plate and Film Company, to bring his camera and spool here and demonstrate it before the association ; it will take perhaps ten minutes' time, and it will be a great satisfaction to those who are here.

The motion was agreed to.

Mr. INGLIS—I nominate Mr. McMichael as president of this association.

The *President*—Nominations are now in order, in addition to the nominations reported by the nominating committee. Remember what is the ticket. The ticket reported by the nominating committee is: Charles Stuart, of Hartford, Conn., as President ; H. McMichael, Recording Secretary; G. M. Carlisle, as Treasurer; and the Executive Committee are W. H. Potter and G. Cramer. The place selected is St. Louis, and the time is May, 1886.

With reference to the vice-presidents named, I would say that they were taken from the last year's list, and many of the names will not be members this year. Therefore, I think the committee should give us a list of members of this year, whom we may elect as vice-presidents of this association, and not elect those who are not members.

Mr. INGLIS—I move that the election of vice-presidents be laid over until to-morrow morning, to give time to the committee that was appointed for these nominations, so that they may have recourse to this year's list to chose from, so that they will get only those who are members. Many have been dropped on account of not paying their dues.

Mr. RANGER—A great many want to go away this afternoon. I think the meeting ought to be fixed for two o'clock.

Mr. W. H. Porter was then nominated for president.

Mr. BELLSMITH—I nominate Mr. G. M. Carlisle for president.

Mr. BAKER—I nominate Mr. G. F. Ryder for president.

Mr. INGLIS—I would say that Mr. Ryder told me that he would not serve as president. Mr. Carlisle has also refused to serve in that capacity.

On motion, the nominations were closed.

The tellers then proceeded to collect the votes, with the following result :

Stuart, 7; McMichael, 42; Potter, 53; Carlisle, 1; total number of votes, 103 ; majority necessary to a choice, 52. Mr. Potter having received 53, is therefore elected.

The *President*—I now declare Mr. Potter elected, and we would like to have Mr. Potter come on the platform.

Mr. RANGER—Mr. President, I move that the nomination of Mr. Potter be made unanimous. Agreed to.

Mr. POTTER—Ladies and gentlemen, and Mr. President : I heartily thank you for the honor you have conferred upon me. I shall, with your united assistance, try to make the thing a success next year. I know where my strength lies. That our administration will have a policy and a decided policy, and that policy shall be to unite every member of the association. Knowing that I can serve your interest and that you can serve mine, we shall make the next convention a record of success. I thank you again for the honor you have conferred upon me.

The *President*—You will now prepare your ballots for treasurer. Nominations are in order for treasurer. Mr. Carlisle has been selected by the committee.

Mr. RANGER—I move that Mr. Armstrong

cast a unanimous vote of the association for Mr. Carlisle as treasurer.

Mr. POOL—Are you not going to vote for the secretary first?

Mr. RANGER—I would ask if the secretary is not appointed.

The *President*—This is the recording secretary, not the local secretary. I think that the local secretary should be appointed by the president, and he ought to be appointed from the location that is selected for the next meeting. Mr. McMichael has been nominated by the committee as recording secretary.

Mr. CLARK—I move that he be elected by acclamation.

Mr. BELLSMITH—I rise to express my opposition to the re-election of officers for successive years. I consider that this association contains sufficiently able men, in whom we have the utmost confidence, whom we can elect as the officers of this association. Therefore, I think it is unnecessary to re-elect the officers from year to year. I think I hold the utmost regard for the two gentlemen who have been nominated for the positions of secretary and treasurer.

Mr. INGLIS—I would like to say a word in regard to that. I do not know but it is a good thing to have the officers rotated from year to year, and not elect the same ones; but it depends upon the peculiar circumstance of the association. Just now we have confidence in the present officers, and I think it would be well if they could be kept in another year. I think that Mr. Carlisle and Mr. McMichael are men that are doing their very best for the interest of the association, and are highly honorable men indeed. They give their services very freely. Both of these gentlemen have worked very laboriously and diligently, and therefore I think that we ought to elect them both, Mr. McMichael as secretary and Mr. Carlisle as treasurer.

Mr. GENTILÉ—I most heartily indorse the remarks made by Mr. Inglis. I am perfectly satisfied with the present officers. We have found them honorable men, Mr. Carlisle, and Mr. McMichael as secretary, and they are both thoroughly posted in everything connected with the business of this association, and they make very excellent officers.

Mr. INGLIS—I think that Mr. McMichael has had a hard year's work. Let us now give him a pleasant year and pleasant work.

The question was then called for.

The question being on the motion that Mr. Armstrong cast the vote of the association for Mr. McMichael as secretary,

It was agreed to.

The vote was then cast by Mr. Armstrong, and Mr. Baker announced that Mr. McMichael had received the vote of the association for the position of recording secretary for the ensuing year.

The *President* then declared Mr. McMichael elected as secretary and appointed Dr. Edward L. Wilson as a committee of one to bring Mr. McMichael forth.

Nominations were then open for treasurer.

On motion, the nominations were closed.

On motion of Mr. Clifford, Mr. Armstrong was instructed to cast the vote of the association for Mr. Carlisle for treasurer of the association for the ensuing year. This was done, and the tellers reported that the vote of the association had been cast for Mr. Carlisle for the treasurer for the ensuing year.

The *President* then appointed Mr. Clifford and Mr. Hurd as a committee of two to bring Mr. Carlisle to the stand.

The *President* then announced that nominations were in order for the members of the executive committee.

Mr. G. Cramer, of St. Louis; L.W. Felt, of Chicago, and Mr. Clark, of Minneapolis, were nominated. Only two were to be chosen.

The ballot was then had, and the tellers reported that Mr. Cramer had received 62 votes, Mr. Clark 35 votes, and Mr. Felt 32 votes.

On motion, the election of Mr. Cramer and Mr. Clark was made unanimous, they having received the highest number of votes.

Mr. CRAMER—You have voted to meet next year at St. Louis. I shall make it my duty to make the members of the association happy at the next convention. I shall try all in my power to have a successful meeting, but for the information of the committee I should like to know what has been done—the decision about this medal business. I understand my motion was that ten medals should be awarded, and that that motion has been carried. How should it be decided upon?

The *President*—It has been left to the Executive Committee.

Mr. CRAMER—I hope that this award of medals will draw out the finest exhibits that we have ever had at the next meeting in St. Louis, and that that exhibition will surpass all others.

Mr. CLARK—Mr. President, and fellow members of the convention: Since you have elected me to a position on the Executive Committee, I shall try to do my duty to the best of my ability. I thank you for the honor.

The *President*—The next business will be the selection of the place for the meeting next year. The committee have selected St. Louis.

On motion, the naming of places was closed.

Mr. RANGER—I move that the Secretary be directed to cast a ballot for the next place of meeting.

The *President*—I think that is not necessary. I will put the motion to the house.

The question then being on selecting St. Louis for the next place of meeting, it was agreed to.

Mr. POOL—As I understand, you have decided on the location for the next meeting, but you have not decided the time when that meeting shall take place. Now, I think that May should be considered. According to the suggestion of the committee, we are to go very early in the year. Now, I would suggest that we meet there in October or November.

The *President*—The committee has suggested May, 1886.

Mr. CLIFFORD—The time of meeting in St. Louis was selected in May before it was understood that medals were awarded. As far as I am concerned, my largest business is in the months of May and June, and I prefer to have the month of May to any other month, and I cannot leave my business in June; but I am bound to go there if I am alive and able to reach there.

Mr. RANGER—The business of photographers is generally better in the spring, until June, than it is in the summer. I think they will have more leisure in July and August than at any time of the year, and will then have more time to give to the convention.

Mr. ARMSTRONG—I understood the vote to be on the nomination for the place to be St. Louis, and the time to be May. The committee canvassed on that, and they discussed the merits of the time of the meeting.

Mr. GUERIN—The meeting will be held in September.

The *President*—A motion will be in order to that effect.

Mr. BELLSMITH—I move that the whole matter be left to the Executive Committee. Agreed to.

Mr. CRAMER—I believe, as we have passed the resolution to award these medals for the best exhibits, it would be very proper for them to make an award for the best paper read in the association. It would draw out some very valuable lectures, which we have been seeking for all the time. I therefore make the motion now that we make an award for the best paper of a practical value in addition to that already voted for, and that the association donate something for that purpose.

Mr. GENTILÉ—I second that motion.

The *President*—It is moved and seconded that an award be made for the best paper of a practical value presented to the next convention, in addition, and that the association donate the sum of $100.

The question then being called for, it was agreed to.

The *President*—We have all seen the medal that was presented by Mr. Gentilé, and that was awarded to Mr. Ryder. I think that the society should take some action in this matter, some official notice of it, and to that end I now move a vote of thanks to Mr. Gentilé.

This was agreed to, and the vote of thanks was tendered to Mr Gentilé for the handsome medal that was presented to Mr. Ryder.

The *President* then announced the investigating committee to be Messrs. Bellsmith, McMichael, Pool, Potter, and Joshua Smith.

Mr. GENTILÉ—I wish to call your attention to remarks made in my report in photography that we should pass certain resolutions to the memory of a gentleman who had done more for the advancement of photography in this country than anybody else, that is, to the memory of the late H. T. Anthony.

Mr. RANGER—I make a motion to that effect. This motion was seconded.

The *President*—It is moved and seconded that proper resolutions be passed in honor of Mr. H. T. Anthony, who has done so much for photography, and that a committee of three be appointed.

The question being on motion of Mr. Ranger, was agreed to.

The *President*—I will appoint Mr. Gentilé and Mr. J. Traill Taylor on that committee.

On motion of Mr. Ranger, the convention then adjourned till 2 o'clock this afternoon.*

REPORT OF EXECUTIVE COMMITTEE ON PICTURES.

The Executive Committee make the following report of the pictures of the exhibition held at Buffalo, N. Y., July 14 to 18, 1885.

Mr. HARDY, Boston, Mass., exhibited nine 11 x 14 panels, full length, half length and heads. Fine rendering of white drapery and nice effects throughout. The head of a child particularly noticeable for the soft and textuary retouching. It was understood these pictures were only shown as illustrating the value of the Stanley plates, on which they were made.

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* Report of Afternoon Session is crowded out of this issue of BULLETIN.

H. S. Myer, Yonkers, N. Y., showed a series of views.—Tho. Gubelman, New York, a similar collection.

Taylor & Freeman, of Rochester, N. Y., a miscellaneous lot of small portraits.

Sawyer.—Some excellent small views. These, together with a score of pictures showing eclipse of sun, were all made on Monroe plates.

G. M. Carlisle, Providence, R. I., had a small but attractive display, uniquely cased. Fine chemical effects were shown in these pictures. Two 17 x 20s were particularly noticeable, one a full length figure of a man, capital in all respects; and the other an illustration of the story told in the poem "Yussouf." This was a subject exceedingly difficult of treatment. but handled with great vigor and skill.

Dressel, Buffalo, N. Y.—Large frame of rustic views, residences and one interior. The latter exceedingly fine. The rustics also of more than usual excellence. The architectural subject showed the use of a lens not adapted to the work, or else want of skill in its use.

Brainard, Rome, N. Y.—Seven photographs, one 7 x 13 panel, the others small. Made on Stanley plates. Took Anthony prize of small camera offered for small pictures on this brand of plate. Also quite a collection of large photographs, well handled. The lighting and retouching fine; tones not equal to the best.

R. G. Gardner, Kansas City, Mo.—Collection of portrait work and views. Not much praise could be accorded to the views. Some of the out-door work excellent. Some hints of good posing of heads.

Sarony, New York City.—Two frames of assorted sizes of portrait work, hardly in keeping with his great reputation. One head of lady, however, 7 x 13 panel, should be particularly mentioned for the masterly effect in lighting and posing.

Ryder, Cleveland, Ohio.—Very large collection of large panels, heads, figures and views. This work was in all respects of that exceptionally fine quality that marks his productions. Great care and taste were shown in the mounting and framing of the pictures. This exhibit was awarded the prize of a gold medal of the value of $100 offered by Mr. Gentilé, of the *Eye*, for the best collection of American photographs.

McMichael, Buffalo, N. Y.—Large collection of large work. These portraits showed great skill in many respects. The charming tones of these pictures were not excelled by anything in the exhibition. The splendid background effects should also be particularly mentioned. The head of Mr. Ryder was a star.* It must be said, however, that the retouching of Mr. McMichael's heads is not in keeping with the rest of the work.

W. A. Armstrong, Milwaukee, Wis.—A collection of views in and around Milwaukee. These pictures were small, 8 x 10 size, but for charm of subject and excellence of execution nothing further could be desired.

C. G. Gilenz, Toronto, Canada.—Small collection of photographs, showing enameling effects. The desirability of enameling must be left to patrons for decision. The enameling was well done.

E. L. Fowler, Chicago, Ill.—These pictures were shown to illustrate the value of retouching. Prints from the same negative, plain and retouched, were placed in comparison. Mr. Fowler does good professional work, which means over-work. His retouching, however, is free from many of the faults usually seen in work of this kind.

Kinney, Hackettstown, N. J.—A series of out-of-door scenes and groups of figures combined. This work was made with E. A. lens, and was fine in all particulars.

H. F. Neilson & Co., Niagara Falls.—This was a collection of views of Niagara Falls, large and small, in summer and winter, and was a splendid and interesting lot of pictures. The difficulty in making negatives of this great natural wonder had been well overcome, and left little to be desired, except that the absurdity of the cloud effects might be omitted. These were printed in separately from cloud negatives, or one cloud negative rather, so strong as to overbalance the picture, and often of a character and lighting to entirely disagree with it. In several of the views this feature was dispensed with, and the pictures were then of the most satisfying character. These photographs are of so much interest and value to the whole public, that it seems a pity pains should be taken to mar the splendid results achieved in the negatives.

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* The photograph of Mr. Ryder was life-size, made on the Stanley plate in five seconds with a Dallmeyer lens. This exhibit won the Anthony first prize for work on Stanley plates and N. P. A. paper.

BARKER, Niagara Falls.—This is another excellent series of views of the Falls, but marred by the same use of cloud negatives. The study and skill, the patient waiting and effort of this artist, have given to the world some most beautiful and realistic effects.

CRAMER, St. Louis, Mo.—A very large exhibit of large work. Heads and composition pieces. This collection is one of remarkable brilliancy of dry-plate effects. There are also examples having great artistic value here. The head of a lady in profile, with soft shadow against a very light ground, is one of the most beautiful things that photography is capable of. Another, a group of children's heads, is almost as good.

MARSHALL, Canandaigua, N. Y.—Two examples of solid crayon work, and showing much artistic skill. These portraits, however, are open to the objection of being worked too fine, which impairs their value when viewed at the right distance.

NIER & WETTLIN, Rochester, N. Y.—Two or three crayon heads of more than usual value. The one profile especially deserving of commendation. The criticism to be made here seems to be a too positive touch in working the face, and background of too definite character.

WILSON, of the *Philadelphia Photographer*.—An interesting series of views of the New Orleans Exposition. This work was very good, considering the difficulties to be encountered.

GEHRIG, Chicago, Ill.—An exhibit of panels of assorted sizes. This was artistic work, nice lighting, splendid tones. The overdone retouching detracts somewhat from its value.

MORENO & LOPEZ, New York City.—A variety of work. Large heads, instantaneous views of bicycle riders and figures in motion. The results were very astonishing, showing vaulters in mid-air and wheelmen going down steps, etc. Heads would have had much better value on suitable dark grounds.

WARDLAW & LEARNED, Rochester, N. Y.—Large exhibition of 11 x 14 heads and smaller sizes, far beyond the usual merit. The over-retouching was a defect. The pictures would have looked much better against anything rather than the white cloth which backed up this exhibit.

W. J. BAKER, Buffalo, N. Y.—A splendid collection of almost every variety of size. The head of a middle-aged man, with side whiskers, and the profile ot an old lady in cap, must be particularized. These were gems of photographic portraitures. The lighting, posing, retouching, and everything that contributes to the general effect, could not have been better. Mr. Baker's style in, and moderation of, retouching was noticed with great satisfaction.

TAYLOR, Clinton, N. Y.—Frame of small but tasteful work.

DAVIS, Rochester, N. Y.—Case of character figures, mostly good effects; superb tones.

W. W. SHERMAN, Milwaukee, Wis.—Carbon enlargements. Fairly good as foundation for crayon portraits, but far behind the results of platinum.

IRVING SAUNDERS, Alfred Center, N. Y.—A large and tasteful frame of miscellaneous work of good quality and very tasteful.

F. J. HAYNES, Fargo, D. T.—Six very large views and some smaller ones. Nothing of the kind in the Hall more interesting or better, all things considered. The only possible criticism, a slight under-timing of some of the larger ones. The cloud effect in one or two was superb, and evidently all in the original negative.

FRANK ROBBINS, Oil City, Pa.—A large collection of small negatives and prints, demonstrating the value of the plate he manufactures. This exhibition speaks highly for his plate, and the prints shown had good value.

WINSLOW & WHIPPLE, Olean, N. Y., and J. W. SIRES, Oil City, show a large number of prints illustrating the value of Robbin's plate.

JOHNSON BROS., Watertown, N. Y.—A tasteful small case of work of fine chemical effect. The vignetting of these pictures should have received more attention.

JULIUS HOFFMEISTER, St. Louis, Mo.—Examples of retouched negatives; fairly good work; some things to learn. In trying to keep from obliterating the prominences of the face, they are rather exaggerated.

WINTER, Syracuse, N. Y.—Some large pictures made with Suter lens. This is fine photography. The work of the lens must be highly commended, as well as the artistic qualities of these productions. The figure of a lady, as she beholds herself in a mirror, is a particularly fine thing.

SCHURR, Lockport, N. Y.—Quite a large display of rather more than average work. Some panel heads of children very fine. A tendency to overwork the negative is noticeable.

KUHN BROS., St. Louis, Mo.—Exhibit of stamp portraits.

THE PHOTO-GRAVURE CO., New York City.—Three frames of work, showing examples of gelatine printing. Very interesting exhibits.

D. R. CLARK, Indianapolis, Ind.—Six portrait heads, a full length and a group. These pictures are of great excellence in all respects. It is a peculiarity of Mr. Clark that the retouching is so skillfully done as to preserve the value of the face.

W. H. POTTER, Indianapolis, Ind.—A collection of miscellaneous sizes of exceedingly fine work. The art quality of these pictures gives them great value as studies. One could hardly particularize the good things in this exhibit without naming the most of them.

THE ST. LOUIS DRY PLATE Co.—An exhibition of negatives and prints that show unsurpassed qualities of plate.

GENELLI, St. Louis, Mo.—An exhibition of stamp portraits.

LANDY, Cincinnati, Ohio.—The display of Mr. Landy grew steadily in favor during the convention. Not of the dashy order, but having the solid qualities of good work. Excellent effect in posing and lighting. Backgrounds that harmonize with the figure. Some large heads in soft and luminous shadows against a white ground should be particularized.

MUDGE & MUDGE, Elkhart, Ind.—Small display, which made one regret it was not larger.

W. C. NORTH.—A unique frame of small pictures. Some nice work.

DAVID SCANNELL, Philadelphia, Pa.—Enlargement on porcelain. Opal colored in oils.

KENT, Rochester, N. Y.—A very large display of work on the paper negatives, which excited much interest as a novelty in the manner of production, and was especially admired for the highly artistic effects which this gentleman knows so well how to produce. The retouching of some of these heads was so free from the usual faults as to make them deserving of mention in this respect.

CLEMENS & WILSON.—Small frame of views, very good indeed.

EDY BROTHERS, London, Ont.—A collection of large panel work, excellent in all respects. Retouching may be particularized.

The two remarkable pictures by H. P. Robinson, of "Tunbridge Wells" (owned by Mr. Ryder, of Cleveland), afforded a splendid study to the members of the association. It is seldom that any composition work of equal value is seen.

The foreign exhibits, comprising the work of FRIED A. MULLER, of Munich; W. HOFFERT, Bingen, and KINDERMANN, of Hamburg, and others, besides heads and figures, a collection of large landscapes, are of a very charming character. These pictures possess an art quality that makes the most excellent studies. Perhaps the gem of the collection is the two-thirds length female figure, standing in an attitude of repose, with loosely folded hands.

In this part of the hall is noticed a life-size direct head by CONLY, of Boston, Mass., which is a picture of remarkable merit.

In closing this account of the pictures, perhaps it would not be amiss to say that the writer has not attempted any extended criticism, it being his purpose merely to make a record of all the displays, with such passing comments as they seemed to suggest.

The exhibit, as a whole, has been a very large and a very fine one.

D. J. SMITH, of Detroit, had an exhibit which seems to have escaped the notice of the reporter for the Executive Committee. These pictures were very good and competed for the first Anthony prize for pictures of 11 x 14 and over made on the Stanley dry plate. Unfortuuately there were not enough large size pictures in this exhibit to enter the competition as a collection. The smaller pictures exhibited showed much fine work, and the few large ones were of the highest order. When we say that they were the work of Mr. L. G. Bigelow, we stamp the character of the work. We regret that the pictures did not come within the conditions of the offer.

◆

AUG. 19, 1885.

Editors of BULLETIN :

I AM a reader of your BULLETIN, and must say I appreciate such a valuable prize and aid to photographers. I am succeeding finely with the aid of your valuable paper, and I am happy to think that photographers have such a friend as the BULLETIN. Three cheers for it!

W. B. COOK.

AUG. 20, 1885.

I WILL say that the BULLETIN comes regularly every two weeks and is full of news and knowledge. I consider that it has saved me many times the subscription price since January 1, 1885. I could say more, but will not at present. Yours respectfully,

MILES HARRIS.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

An informal meeting, termed an "Experience Meeting," of this Society, was held at the rooms, 1260 Broadway, on Wednesday evening, August 12. The Vice-President, Dr. John H. Janeway, occupied the chair, and about twenty members were present.

The secretary read a letter from President Beach, whose engagements did not permit him to be present, as follows:

New York, August 12, 1885,
361 Broadway.

Dr. John H. Janeway,
Vice-President of Society of Amateur Photographers of New York,
1260 Broadway.

Dear Sir: I regret very much my inability to be present this evening and listen to the interesting discussion which will doubtless arise on the subject of dry plates and their various inconsistences. I trust each member will strive to bear in mind that it is each little incident which he may personally experience, when brought out and placed alongside of the discoveries of others, that enables us to generalize and ascertain any special fact relative to the working of dry plates. And for this reason we should take into account all the things which come under our observation about dry plates, note them down and report at our different meetings.

I was fortunate enough to take a trip recently to Buffalo, and while there attended the convention of photographers. I was glad to notice the general good feeling which prevailed among photographers toward the amateur. I learned from several of them that they considered our society was doing good work and reports of our meetings were read with much interest.

There were a great many interesting things to see and I was very favorably impressed with the exhibition of apparatus. One of the striking novelties was a very complete exhibit of apparatus for making paper negatives, and also a large exhibit of the negatives and positives themselves, by the Eastman Dry Plate and Film Company. The pictures included landscapes and portraits, and appeared to be as soft and distinct as if taken on glass.

I am happy to say that I have secured the consent of the Eastman Co. to favor us with a demonstration at our next meeting, on September 8, and expect at that time to have the apparatus and process fully explained to you.

During my stay in Buffalo, I improved my time by photographing a few of the interesting objects to be seen there, and had occasion to test the advantages of a hotel bedroom as a dark room at night for changing my plates and a candle ruby lamp for the light. My experience in this respect was comparatively new to me, but confirmed me of the desirability of carrying with one a changing bag or tent, something like that which Mr. Grisdale showed us some time ago. The room fronted on Main street, and as is the fashion nowadays, that was illuminated by the electric arc light, which filtered through the inside blinds on to the ceiling above. Fortunately I had brought with me four or five sheets of ruby paper and effectively transformed the light to a safe color. Another difficulty presented itself at this point. Parties occupying a room on the opposite side of the hall arrived, and turned on all the lights in their room to their full height. Naturally the light leaking through their transom was faintly reflected by the ceiling of the hall through the transom over the door of the room I was in. The friend that was with me suggested this would do no harm, and, venturing to try it, I next lighted the candle in the ruby lamp. This appeared to burn all right until I was half through with the plate changing, when I noticed the heat inside the lamp was so intense as to melt the sperm grease faster than the light consumed it, resulting, as might be expected, in an outflow of melted grease upon the objects supporting the lamp. Discovering this in time, I succeeded in safely suspending operations until a new section of candle was inserted and lighted. Regarding candle ruby lamps, I advise a better ventilation to admit more air, and for changing plates in hotels, the necessity of impressing upon the proprietors of the same the construction of a dark room, or a room without a transom, for the benefit of strolling amateurs.

The next day, after changing these plates, I spent at Niagara Falls, just after it was made free to the world, and had a very enjoyable time. Carrying my camera with me, and one of the new light folding tripods just introduced by Anthony & Co., I took in the Falls from different points.

It had been impressed upon me by those who know, that it was very common to over-expose your plates when taking a shot at the Falls, so I accordingly stopped my Ross lens down to $\frac{f}{22.6}$ and put the Prosch Eclipse shutter to its highest tension, with both springs on, for the water runs with lightning speed over the precipice. I had some St. Louis plates, registering about 20 on the sensitometer, and which had previously given me very good results. I made all my exposures around the Falls with conditions as above mentioned, and had a brilliant sunlight, occasionally made slightly hazy by floating clouds.

A few days after reaching home I undertook the development of my results, using the sulphurous acid pyro, sulphite and potash developer. As anticipated, I had no difficulty in bringing out the water perfectly; it seemed to have been exposed about right; but when I came to push the development further to bring out the green foliage along the banks, I found a veil was coming over the plate, and to save the water effects I was obliged to suspend development. The foliage and sky appeared to be greatly under-exposed, as you will notice from the prints and negatives which I send. The veiling I attribute to the exposure of the plates to the faint light which came over the transom window at the hotel, and the thin sky in the negative to the peculiar narrow opening in the Prosch shutter. But I wish to call your attention to another point; please notice the wide mark extending around the border and inward on the surface of the plates, due, as you all know, to the celebrated separating mat with which we have had so much experience. This mat measures exactly ⅜ of an inch wide, and when you come to lay it on the surface of a 4 x 5 plate you will notice, especially if the mat contains hypo, as we have proved it does, there will be very little actual surface of the film which will be useful in taking a picture on. Each plate you will see has this marking quite distinct, which in some cases extends inward as much again as the width of the mat. We have heard that it may be avoided by keeping the plates on edge; that it is sometimes due to pressure, dampness, etc. The facts in this particular case are, that these plates were only made eight months ago, and ever since their manufacture they have been carefully kept in a dry place on edge. Why the majority of dry plate manufacturers continually ignore these facts in regard to injurious packing, and go on day after day putting up their plates in a way which will surely injure them and eventually hurt their trade, I cannot understand; and in this connection it was particularly refreshing to me to see a leader in the *Photo Times*, a few weeks ago, headed "Reform in Dry Plates." That is the key-note of the whole matter; we *want* reform in dry plates, both as to packing and uniform cutting.

During the past two months I have had occasion to open four or five packages of 4 x 5 plates, and in three instances discovered two plates to a package which were so irregularly cut that I could not use them. One of our members recently told me that he knew of an instance where only *seven* plates out of two dozen would fit the holders, and he himself had been able to use but five out of a dozen in one package. They were very badly cut, the glass being twisted in two, as it were, where the supposed diamond cut had been made, making a circular edge at the end of the plate. He had become so tired of wasting his time in trying to utilize the plates, that he had concluded to give up photographing for a while until some one could make a plate that was cut right. The size employed was 3¼ x 4¼. Instances of this kind are universal, and reform is absolutely necessary if we expect to extract pleasure out of photography.

While at Niagara, I experimented a little with paper negatives, and send you some specimens. The negative marked No. 1 is made on the new Eastman paper, developed with pyro and potash, and No. 2 is made on Morgan & Kidd's new negative paper. No. 1 represents the depot platform at Niagara, and No. 2 the triumphal arch in front of the International hotel. With the Eastman paper a trifle more pyro was used than was necessary, and, if anything, the development was carried further than it need to have been. It is recommended by the Eastman Company to oil their negatives with castor oil to make them print quickly, but by way of experiment I thought I would make a silver print from each and note the time occupied. Silver print No. 3 from the Eastman negative required one and a half hours to print in bright sunshine. Print No. 4, from negative No. 2, required only fifteen minutes in bright sunshine.

It will be observed that the Eastman paper is much thicker and coarser-grained than the Morgan paper; and, as the negative is somewhat denser, these facts account in a measure for the extra amount of time required.

If both negatives had been rendered transparent, the time would be merely that required from glass plates. Taking Morgan's paper as the best type of gelatino-negative paper yet produced, wherein they claim that there is no need of making it transparent, it would seem that it takes three times as long to obtain a silver print as with ordinary glass. I also send a specimen photograph of a streak of lightning, made on August 1, at 10:30 P. M., by Mr. W. N. Jennings, of Philadelphia, Pa. He says that it demonstrates a theory which he has held, that lightning does not travel in elongated zig-zags, as it is sometimes shown in book illustrations, but really takes a wavy course. Across the top of the picture is to be seen a faint horizontal streak, and a bunch of small streaks run parallel with the main bolt. He seems to have secured an excellent focus, and faithfully reproduced the vivid effect of the lightning, as will be observed by the detail brought out on the buildings in the foreground.

I send a lantern slide holder sent me by Mr. Hugh C. Baker, of Hamilton, Ontario, Can It is made of three layers of wood; the center acts as dividing frame to hold the two outer frames apart the thickness of a glass slide, having the aperture cut in them the right size for the lantern. One of these frames is glued to the middle frame, the other is loose and is clamped in place by two tin U-shaped pieces, extending across the width of the holder, at each end. To remove the slide it is only necessary that the metal clamps be pulled off and the movable frame removed. A V-shaped notch in the upper edge centers the carrier when inserted in the lantern. Mr. Baker speaks very well of it and says it is excellent for centering the slide in the lantern, and for easily removing it for any desired purpose.

Hoping I have not tired you with this lengthy letter, I am,

Yours respectfully,
F. C. BEACH.

Mr. PARTRIDGE—As many of our members may be forced to use a hotel room as a dark room, some of my experiences in that direction may be useful. I have been compelled, during the past two years, to do a very large amount of work in rooms such as I find at country hotels, with such conveniences as the hotel affords or I could carry in an ordinary grip-sack. The first thing that I put into it was two or three strips of black cotton cloth—silesia, or something of that sort. Each piece I made usually about six feet long by a yard wide. Those answered to darken windows, etc., by means of a few tacks, which I added to my kit. I could darken windows, I could shut out electric lights, could stop up transoms and be independent of any outside light, though in some cases—one I remember in Baltimore particularly—I have had to take the blankets from the bed, the bedclothes and sheets, and make a dark room in that way.

The next thing was a light, for I carried no candle and no ruby lantern. I had two or three pieces of ruby paper folded in such a way and put in my valise that when I was ready to make a lantern I could fold it up in a square and put a tin plate on the top, or else roll it up and set a tin plate on the top; and, then, as I came in at night, I bought a couple of candles at the grocery, and was prepared for my work. One advantage was, that the candles were not very hot and the paper was lighter and packed in a smaller space than I have ever seen a ruby lantern. In fact, they occupied about twice the space that that sheet of paper does.

When one is in the country, one often finds himself nonplused for lack of water. I have successfully washed plates with less than a pitcher full of water to pour on them. I have washed six plates in an evening by putting them into a wash-bowl, face down, two edges together, cob-house fashion; changed that water once or twice during the evening and found the hypo eliminated sufficiently so that the plates have kept eighteen months; six plates in that way can be washed in one bowl of water after having got them clean by pouring water from the pitcher upon them. To those of us who have been in the habit of washing for hours in running water, that seems remarkable, perhaps, but the film being face down affords the very best opportunity for the dissolved hypo to fall directly from the plate.

(To be continued.)

Views Caught with the Drop Shutter.

CHARLES LEACH, of 209 West Baltimore st., Baltimore, Md., had his studio damaged by fire on September 4th; the damage was about $400, and was insured.

Mr. W. H. MOWREY, operator for F. I. Harris & Co., has been carrying off many laurels at Skaneateles, N. Y., where he has been capturing many happy portraits of children, and has become noted there for his artistic work.

Mr. S. P. TRESSLAR, of Montgomery, Ala., and formerly of Fort Scott, Kansas, has taken Wallin's studio in the former city. He left many good friends at Fort Scott and will surely gain many more in his new home.

C. F. RICE, of Wabash avenue, Chicago, sends us a very handsome catalogue of picture frames and other fancy goods. It is a monster in size, and we are talking of having a timber frame built to hold it, with large blocks and tackle attached to move it around.

What Our Friends Would Like to Know.

N.B.— We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—S. S. C. writes:—I silvered eight sheets of paper day before yesterday. After fuming I discovered nearly all of it to have become spotted like sample inclosed. I never saw or heard of anything like it before. Will you please inform me of the cause and how remedied through BULLETIN?

A.—Paper received. It appears to us that some dust of a reducing agent like pyro got upon your paper before silvering. We cannot account for the spots in any other way.

Q.—J. L. W. writes:—I would like to ask two or three questions in regard to toning silver prints, and would be greatly obliged if you will kindly answer them through the medium of your very interesting BULLETIN.

How long and in about how many changes of water should a print be washed before toning? How long before using is it advisable to make the acetate of soda bath, and do you put in the gold and soda at the same time?

Also, how long does it usually take to properly tone a print? My greatest trouble is in toning; it sometimes takes me three or four hours and then I am not at all satisfied.

A.—Wash your prints in water containing a little bicarbonate of soda once, and then once with clean water, this will give blue-black tones with gold afterwards. If you like brown tones, wash in water with a few drops of acetic acid instead of the bicarbonate. Make the gold toning bath 24 hours before use, and put in all the ingredients at that time except the gold chloride, which should be added about half an hour before using. The time of toning varies, but should not take more than twenty or thirty minutes.

Q.—R. M. W. writes: I am a beginner in photography, and know but little about chemistry. I notice in the Year Book of Photography that pyrogallol is put down in a table of poisons; that two grains is sufficient to kill a dog, etc. If this be true, why are not bottles containing it marked "poison."

A.—We do not know that the law requires all poisons to be so labeled, and, even if such a law exists, there is no authority to prosecute in such cases. Such is the consistency of our law-makers. We presume, the writer in the Year Book has an authority for his statement about pyrogallol; but, after much searching, we cannot find any statement in the books.

F. O. Hills writes:—Please say to the readers of the BULLETIN, that a light of common glass, painted a light yellow and placed back of the ruby glass in the dark room, will make the light very much easier for the eyes. I have used one six months, or more, and have it so arranged that I can use either color alone on dark days.

I am having all the work I can do, and all owing to the improvement in my work by the use of dry plates; I would not go back to the old process under any consideration. I inclose two little photos of babies, taken on Stanley plates—the one in swing, less than two years old, taken in less than one second, I think.

[Pictures are excellent.—EDS. OF BULLETIN.]

Q.—J. W. D. writes:—At the bottom line of page 58 of "How to Make Photographs," the ferrous oxalate developer is referred to; is it the one on page 18? If so, please tell me how to prepare the saturated solution of oxalate of potash, sat. sol. of sulphate of iron, and sat. sol. of alum?

A—Saturated solutions are made by adding the salts to be used to hot water, and shaking till no more will dissolve. When cool, these solutions will deposit some of the salts and, consequently, are saturated; that is, they contain as much of the salt as they will hold. The camera diaphragms are all right.

Q.—C. W. S. writes:—Being desirous of settling a point in my mind regarding certain halogen salts, I would like to inquire whether the following named compounds are used in photography: bromide silver, chloride silver, iodide silver. If not, could they be used, and have they ever been used?

A.—The whole of the art of photography depends upon the use of the above compounds. They are, and have always been, used very extensively.

A. W. W. writes:—I read in the BULLETIN a few numbers back, an article on the chemical effect of the blue or violet rays of light, which brought to mind a circumstance which occurred in my gallery, which illustrated the subject nicely, and is, perhaps, new to many. A lady insisted on wearing her blue glasses in having her picture taken, and, although her eyes could not be seen through the glasses, her eyes were well defined, clear and bright, without any reflections in the negative.

Q.—H. W. P. writes:—Is there such a thing as "lemond of tartar?" if so, where can I get it? Will pyro, bromide potassium, bromide ammonia, chrome alum and sulphuric acid make a developer for dry plates, without ammonia or soda?

A.—We do not know the above compound. There is cream of tartar, which can be obtained at any drug-store. To the last question, we answer, No!

Q.—G. J. S. writes:—Can you answer, through the BULLETIN, how weak hypo should be to fix prints? Also how long the prints should remain in the bath? Will an alum bath be good on silver prints?

A.—Hypo, 1 ounce; water, 6 to 8 ounces, is a good strength. Fix 15 minutes. Alum is not used for silver prints.

Q.—J. C. P. writes:—Please tell me in the next BULLETIN what is the matter with the inclosed print. It was all right until it had been in the hypo ten or fifteen minutes. I had several sheets come out just like it. Do not think I got anything into the soda or the other solutions to cause it.

A.—Use more acid in the silver bath and fresh hypo in fixing. If this fails, condemn the paper.

Bulletin Register.

Mr. MARCUSE, of Marcuse & Cunningham, Montreal, Canada.

T. M. SCHLEIER, Nashville, Tenn.

E. B. HALLOCK, Evansville, Indiana.

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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

ANTHONY'S

Photographic Bulletin.

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*

ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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THE FOREIGN PICTURES AT THE BUFFALO CONVENTION.

This part of the exhibition at Buffalo was particularly interesting from an artistic point of view. The evidence of study in all the pictures exhibited was apparent at the first glance at them. Every picture shown had some effect that was a central idea with the artist, and everything else lent its aid to the bringing out of this idea. This is entirely in the spirit of art work, and is worthy of more attention with many photographers. The mere tyro of a photographer can take a likeness, but it requires artistic taste and feeling to produce an art portrait. We do not mean to say that none of the American pictures showed art feeling in the portraits, but rather that this feeling was not as prominent as it should be, and conspicuously less than in these foreign pictures.

Fritz Einlender, of Cologne, the winner of the prize offered for the best foreign collection, showed a number of large bust portraits of gentlemen that were simply beautiful, both from photographic and artistic standpoints. The lighting, the pose, the beautiful retouching effects and the exquisite tone of these pictures, must be seen to fully realize the great care and fine taste that is brought out in their production. We do not know that we should have given the prize to this exhibit, for we found it exceedingly difficult to choose between it and the equally exquisite pictures of W. Höffert. Nevertheless, Einlender well deserves the prize, and probably the committee saw something in his pictures that escaped our notice.

W. Höffert, of Dresden, had some large heads and studies that pleased us greatly. Here, also, were those evidences of art feeling that we have noted above. There was something about this collection that was quite captivating, and the more we looked at it the better we liked it. The fine warm brownish tone, the beautiful and exceedingly artistic retouching, were to us objects that afforded great pleasure to the eye, and showed a feeling of sympathy between the artist and the subjects portrayed.

Friedr. Müller, who took the second prize offered for the foreign exhibits, showed quite a variety of pictures. Large heads were quite prominent among the portraits, and were full of artistic feeling. Perhaps the most wonderful picture in this collection was a three-quarter figure of a lady. We believe that the pose of this figure was as near perfection as anything could well be. We looked at it many times. It was of quite large size, probably half-life, and the perfect ease of the whole was most surprising. The most striking features were the sweet calm look upon the face and the marvelous grace of the hands, which were crossed in front a little below the waist. We have never in photograph or painting seen more beautiful hands, or more perfect repose given to them. Every photographer knows too well how difficult it is to arrange the hands so that they will not look awkward or have a kind of wooden aspect. In the picture under notice these effects were absolutely eliminated, and the result was beyond measure the most perfect we have seen. We must not forget to mention a number of character studies of small size seen in this collection. These studies were from the lower ranks of German life, and proved most interesting and artistic. It seems a pity that more of this kind of work is not done by American photographers —the results are always interesting.

Schmidt, of Frankfort, had a fine exhibit, which included a large group of Tyrolese, some monastic studies, and a number of cabinet pictures. The Tyrolese group was very pretty, but scarcely as life-like as we should wish. The scene represents a little plateau in front of a picturesque house in the Tyrolese Mountains. The rising peaks in the distance, and the beautiful effects of such scenery, are well brought out. In the foreground are a number of peasants in groups, and some are dancing, all in their picturesque costume; but we cannot help thinking that the figures are a little too rigid to be quite life-like. The monastic pictures, giving interiors of monastery life with monks, were particularly good, and exceedingly life-like. Also the cabinet pictures in this exhibit were of the highest order.

Benque & Kindermann, of Hamburg, showed a number of heads, and half and three-quarter portraits of large size. A half-length portrait of a lady appeared to us very good, the pose and lighting being fine. A portrait of a little girl with alpenstock had a very pretty face and was well taken, the pose, light, and retouching being of a very artistic order.

Th. Creifelds, of Cologne, showed a number of large pictures of scenery that were most beautiful. We have seen nothing more exquisitely finished or more artistically taken than these pictures. It is almost impossible to give an idea in words of the beauties of pictures of this character. The tones were in harmony with the scenes, and the whole effect was pleasing in every sense of the word.

Hanfstangl, of Munich, showed a number of portraits of celebrated men, that were fine and well finished. In this collection was a wonderfully fine portrait of Baeyer, the great chemist, who first prepared artificial indigo; while another equally fine portrait was of Pettenkofer, the great sanitarian, who has done so much work upon the sanitary condition of dwellings. The pictures were quite large, and had a very handsome appearance.

Several pictures of Mr. H. P. Robinson were exhibited by Mr. J. F. Ryder, of Cleveland. Two interiors, one a girl with a dreamy look, standing at a table near a window; the other, "Hope Deferred," a boy sitting on a bench, holding something up for a dog to catch, were both exquisite pictures, and gems of photographic art. But Mr. Robinson is too well known as an artist to need any words of praise from us. We hope he will have more of his pictures at the next convention.

In finishing this notice of the foreign exhibit at Buffalo, we must enter our protest against the manner of hanging the pictures. It was exceedingly difficult in several cases to find out who owned the pictures, the names being upon the back of the cards. Again, would it not be better to have a few cards printed with the exhibitors' names on them, and placed above, with all the pictures under each head? Something of this kind would only cost a trifle, and would look very much better than the method—or lack of method—adopted at Buffalo. Some indication of the processes used in producing the pictures would also prove interesting in judging them.

One word more and we have done. The photographers who stay at home when these conventions meet, have no idea what they lose. The amount of money expended and the time used in attending such an exhibition as was seen at Buffalo, would be fully realized again in the ideas obtained and the knowledge acquired in taking intelligent notes of the work of the masters of the photographic art. The man who does not take notice of the advances of his fellows in any handicraft or art work, will suddenly awake to the fact that the world has been moving and he has been left behind.

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[*From the Photographic News.*]

A NEW HELIOCHROMIC PRINCIPLE.

BY DR. H. W. VOGEL.

In the heliochromic processess of Ducos du Hauron or of Albert, three negatives are taken through violet glass, green glass and orange glass respectively, and from each of these a collotype plate is made, and printed with a color complementary with that of the glass, the three colored prints being, as is well known, superimposed on the same surface. In this method, it should be noted, no very great progress has been made; but it may be mentioned that Ducos du Hauron used eosine collodion in taking all three negatives, no matter whether through red, green or yellow glass.

Now, eoside of silver is sensitive primarily for green, less for violet, and least of all for red; and is, therefore, the worst material when the medium is red glass; and one can hardly recognize it as the best when blue glass or violet glass is employed, as the special green sensitiveness is not utilized.

For exposures through blue glass, pure bromide should be the best material; while when red glass, cyanin gelatine plates are indicated.

Another fault of the Ducos method is the apparently arbitrary nature of the selection of printing colors. The rule that the negative exposed through glass of any given color should be printed in a complementary color is inexact and allows wide latitude. One may say that the complementary color of red is green; but the kind of green is undetermined. As a matter of fact, the complementary color of a certain red is rather blue than green. The author proposes the following:

1. That instead of one single sensitizer being used, that this should be varied according to the color of the glass used as a medium.

2. That the optical sensitizers shall themselves be used as the printing colors; or, if this be not practicable, that colors having the nearest spectroscopic relations to them be selected.

This last condition will be understood, when one considers that the printing colors must reflect those rays which were not absorbed by the sensitive plate.

Up to now, we have available a relatively small number of optical sensitizers; but chemical science is constantly bringing new coloring matters to the front, and many of these promise well. Many things which appear difficult to-day, either from an optical or chemico-technical point of view may be mere bagatelles in ten years' time. Then will the color-sensitive process in photography, and the method of printing in several colors, become a real boon.

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FERROUS OXALATE VERSUS PYRO AND HYDROKINONE.

THE following letter is very interesting, and we reproduce it from the *Photographic News* for the benefit of our readers.

SIR: In a paper read before the Derby Photographic Society, Mr. Henry Bolden, while expatiating on the various good qualities possessed by hydrokinone as a developer, went a little out of his way to abuse the ferrous oxalate developer.

Now, it should be held as a canon in photography that not only may a man have a pet developer, bath, plate, snap-shutter, etc., but also that he may not maliciously misrepresent the qualities of other developers, baths, etc., with which he may not have practical acquaintance.

The charges laid against the ferrous oxalate developer are entirely without foundation; and not only so, but the very faults attributed to it are those from which it is most free.

Categorically, the defects laid to its charge by Mr. Bolden are: 1st, high price, viz., 2s. a pint; 2d, liability to spoil with keeping; 3d, incapability of helping on an under-exposed plate; 4th, inability of retarding one which is over-exposed.

I shall proceed to combat these assertions *seriatim*, begging of my readers to notify that I shall only employ as arguments the recital of facts which any one can verify by trial.

First, as to price. On looking over the lists of the photographic dealers, I find the price of potassium oxalate (neutral) varies from 1s. to 1s. 6d. per pound. Ferrous sulphate is quoted pretty uniformly at 3d. per pound. Ferrous oxalate itself is quoted at from 1s. 6d. to 2s. per pound.

I also find several dealers send out the ready-made ferrous oxalate developer at the rate of 50 ounces for 3s. The fact is it can be made at home at the rate of about 6d. a pint.

When once made it should never be thrown away, but, after each batch of plates has been developed, set aside in corked bottles, "full to the cork," with a trace of tartaric acid added, and exposed to full sunlight. I have quarts of this old solution, over six months in use, which I find invaluable for bringing out images which I suspect have been over-exposed, and in which I desire to get extraordinary density.

Secondly, as to keeping qualities. If the ferrous oxalate developer be made up in two solutions (as it should be), it may be kept several years without any change. The only precautions necessary in this case are to add a trace of cupric sulphate (sulphate of copper) to the iron solution, and to keep the stock bottles well stoppered or corked.

The two solutions should consist of (A) a saturated solution of potassium oxalate and (B) a saturated solution of ferrous sulphate. At the time of using, three parts by measure of A should be poured into the developing glass, to which should be added one part by measure of B, for a normally-exposed picture.

The ferrous oxalate solution after having been used must not be thrown away, but treated as directed above.

Thirdly, incapability of helping on an under-exposed plate. If by this is meant the power of developing an image which has been impressed by the feeblest radiations, then undoubtedly ferrous oxalate is far superior to any other known developer; and if made by dissolving the dry ferrous sulphate in a saturated solution of potassium oxalate, it is the most powerful developer known, bringing out an image when no other agent will.

But if any one expects to get an image where none is impressed, why, whether he use ferrous oxalate or any other developer, he will be doomed to disappointment. Given sufficient time, ferrous oxalate will bring out fully every detail that is impressed; and, what is more, will do this without staining the plate, without green fog, or any veiling of the picture. I have frequently left plates in the developer a quarter of an hour or twenty minutes, with the result of getting superbly brilliant negatives, without a particle of deposit in the shadows.

Fourthly, inability to control the development of an over-exposed plate. This is exactly the point wherein ferrous oxalate shows its great superiority.

If a plate be supposed to be over-exposed, all that need be done is to begin the development with the oldest and stalest ferrous oxalate developer there is in stock, gradually adding a few drops of fresh solution if the image comes out too slowly, or a little distilled water if it appears too quickly.

So certain is this method of development, that I shall be happy to develop and get good printing negatives from any plates that have been exposed any length of time between the normal and ten times the normal, provided the plates have not been previously spoiled or fogged by exposure to light.

Yours, etc.,
S. R. BOTTONE.

MAN is like a potato—Never sure when he will get "into hot water."

[*From the Photographic News.*]

HOW TO SUCCEED IN TAKING GOOD PICTURES ON GELATINE PLATES—No. 1.

BY S. R. BOTTONE.

I CAN imagine that many of my readers will exclaim, "What is the use of writing about this? Those who do not know can buy a six-penny book at any photographic dealer's, which will teach them all they want to know." Perfectly true; I have no wish to decry the many excellent pamphlets, varying in price from one penny upward, by means of which the man most ignorant in photography can be taught to take a picture. But I write for a great many amateurs who, having spent a few pounds in an outfit, taken a few lessons from a photographic friend, and succeeded in taking a few good pictures, gradually find themselves getting into a hopeless muddle. Sometimes the picture is beautifully sharp, but—oh, so thin! At another time it comes out veiled, and pretty black all over, and yet prints without any contrast. At another time the picture seems all out of focus; and again, at another, great transparent spaces appear after fixing. Now, I propose to teach the amateur how to find out the cause of these and other defects; and, by so doing, put him in the way to become a successful photographer.

I do not propose (at present) to give any receipt for the preparation of the gelatine plates themselves, since those that are to be found at the dealers' are so uniformly good that it is not worth while for the amateur to make his own plates, unless he has some special object in view. But I must strongly advise the student to choose a well-known plate and then stick to it until he has overcome every obstacle.

The chief difficulties in the way of success are:

1st. Improper light in the dark room.

2d. Stray light in the camera or dark slides.

3d. The sitter or object badly lighted.

4th. Improper exposure.

5th. Improper development.

We will now proceed to attack these difficulties one by one, so that we can afterward single out the point at which our failures (if any) occur.

1*st. Improper Light in the Dark Room.*—Given sufficient time, I believe any colored light will affect the sensitive bromo-iodized gelatine film; but, practically, dark shades of orange and red are sufficiently inactive to afford protection from injury to the film if the manipulations extend over a reasonable time; and if the window or other source of light be not unduly large, or exposed to the direct rays of the sun, I have found that the glazed linings known as the "Golden Fabric" and "Cherry Fabric" are excellent.

Suppose we have to fit up a dark room with either of these materials, we must carefully block up every window, every chink through which light can pass, except that window we intend to cover with the yellow or red lining. Stout brown paper and good stiff paste can be used to block out any chinks in boards, bad fitting doors, etc. Remember, absolutely no light must enter the room except through the window chosen.

Now, as to the choice of the window. The window for a medium-sized room should not exceed four square feet in size; but if the room is very large, say eighteen or twenty feet long, so that the operating table is twelve or sixteen feet from the window, it may be larger. The window must face the north or west. If it faces the south or east it will be better to block up the window altogether and work by a ruby lantern; the reason for this is, that if the sun shines on the window it must be so much covered with fabric to enable you to work without fog as to be almost dark when the sun goes off; and if, on the other hand, you use only sufficient fabric to enable you to see and work when the sun is not on, then, on the advent of the sun, your pictures will surely fog. Having covered your window (and two folds of golden fabric or one of golden and one of cherry will afford ample protection for ordinary sized windows) you may proceed to test practically whether your room is light-tight. To do this effectually you must begin by making up a little standard developer thus. Take

A.—Neutral oxalate of potash, 4 ounces.
Water.................. 8 "

Place in a bottle capable of holding 12 ounces. Agitate until the water will dissolve no more of the oxalate.

B.—Ferrous Sulphate........ 1 ounce.
Water.................... 2 ounces.

Place in a four-ounce bottle, agitate and keep corked.

Both these bottles should be labeled.* If required, these solutions may be made up in quantities of pounds instead of ounces. A little fixing solution should also be made up, by dissolving one pound of hyposulphite of soda in one pint of hot water, allowing to cool and bottling off. Label this bottle also, and make it a part of your creed never to allow any hyposulphite solution to get near any other solutions (Abney, forgive me!). If you do, you will have stains of all kinds, fogs, reversals, and other pretty effects. (Always wash your hands after having touched the fixing solution.) Having made up these two solutions and placed them in your dark room, take your sample of plates (as yet unopened) to some successful photographic friend and ask him to try one so as to see whether they fog. This is hardly likely; still it will afford you convincing proof as to which side the fault lies. If he reports that they are all right, go into your dark room and close the door, open the packet of plates, lay one of them on your operating table, put the others out of the light (all ruby though it be), and leave the plate untouched for, say, five minutes.

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*The oxalate should be made slightly acid with oxalic acid, and the iron solution must have a few drops of sulphuric acid added to it.—EDS. OF BULLETIN.

Now place it in a small developing tray, and flood it with a mixture of three parts by measure of A to one part by measure of B. Do not shake up these solutions before measuring off; use only the clear portion. Leave the plate in the developer for a quarter of an hour; do not open doors or let any kind of light in except that through the fabric-covered window. At the expiration of the quarter wash the plate thoroughly in clean water, fix in the hyposulphite solution, wash again, and bring to the light for examination. It should show no traces of fog, but appear like a sheet of clear glass—a little opalescent, perhaps, because of the gelatine, but absolutely no deposit or fog.

If otherwise, light enters somewhere, or your window is insufficiently covered. In the latter case, put on another thickness of lining, and try again until you get your plates quite clear.

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[*From British Journal of Photography.*]

THE IMPROVEMENT OF NEGATIVES.

The admitted superiority of the reproductions, recently published, of the pictures in the National Gallery—whether it be due to improved chemical methods or the after-treatment of the negatives—has certainly been the means of bringing prominently forward examples of what may be, and, undoubtedly often is, accomplished by the latter method. Indeed, the examples which have recently been exhibited before the Photographic Society of Great Britain clearly demonstrate that a great deal more can be effected in this direction than many have hitherto imagined.

Now, the improvement that may be wrought by the after treatment of negatives—"dodging," as it is termed by many—is not confined to those of works of art alone, but is equally applicable in the case of negatives from nature; and it is to this point we now direct attention. Few negatives are so very perfect that they cannot be somewhat improved by a little after-treatment—and it is rarely indeed that one is so bad that skillful manipulation will not enable at least a passable print to be obtained. Our remarks, it may be well to explain at once, are chiefly intended for amateurs, as the treatment about to be described is tolerably well known to and practiced by most professional photographers. With amateurs, the retouching or "dodging" of landscape negatives is but little practiced. Hence, if a negative fails to yield fairly good impressions, it is usually rejected forthwith.

Let us take for example a landscape negative, such as an amateur frequently finds amongst his collection. It is one we will imagine, in which the foreground is of a very dark foliage, while in the distance there are, say, some conspicuous white buildings; but the contrast between them and the dark foreground is far too great to yield anything but what is known as a "black-and-white" print. This result may be caused either by under-exposure of the negative in the first instance, by unskillful development, by over-intensification, or by the whole combined. When a negative of this character is met with, the obvious method of dealing with it under ordinary circumstances, would be to at once discard it and take another. This, however, is not always practicable, and we shall assume it to be the case in the present instance.

If a negative such as described be carefully examined, it will often be found that if the foreground were printed by itself a fairly good print might be obtained; so, also, would be the case if the distance and white buildings were printed by themselves. But, when printed as a whole, and the printing is stopped when the foreground is dark enough, there will be no detail in the lights, and if these be fully printed out, then the foreground and deep shadows will be little more than a buried black mass, devoid of all detail whatever.

If presentable prints are to be obtained from such a negative as this, it is clear that either the denser portions must be reduced or the weaker ones strengthened. Different methods —and successful ones too—have been suggested for locally reducing the intensity and negatives; but, until experience is acquired in working them, many would hesitate to risk the loss of an irreplaceable negative, notwithstanding its shortcomings. Or it may happen that the negative has already been varnished; therefore, we must rely upon the strengthening of the shadows, so as to bring them in harmony with the lights without incurring any risk to the negative itself.

Assuming it is an extreme case that has to be dealt with, we first coat the back of the negative with plain collodion, to which is added a small quantity of some coloring matter—say, just sufficient aurine to give the film the faintest possible lemon tint when spread upon glass. When the collodion is dry the film is removed from all parts, except the deepest shadows, with the point of a penknife. Next a coating of matt varnish is applied over the collodion; this, when dry, is in turn scraped away from all the densest portions, leaving it on the shadows and middle tints, as required. If the negative be now examined, it will be seen that far greater harmony exists throughout than before; but the detail in the shadows is probably still too thin. This we must deal with next.

The negative is now held up to the light, or, preferably, put upon a retouching desk, and the fine details carefully gone over with an HB or H blacklead pencil on the matt varnish. The bolder ones may be strengthened with a paper stump, very sparingly charged with plumbago. The sparkling lights on the foliage had best be intensified with the pencil on the face of the negative. Finally, over the whole of the back of the negative is strained and secured at the edges a piece of mineral or thin tracing-paper, and from this the extreme high lights are carefully cut out with a sharp penknife. It is a good plan to just touch the cut-out edges with gum-water. This secures the paper to the glass, and renders the edges more transparent, thus preventing their showing as an abrupt line in the print. A negative treated in this manner will take longer to print than it did originally—because all the weaker parts have been intensified—though not longer than would have been required to secure the detail in the lights had they been fully printed regardless of the shadows.

In order to illustrate what may be accomplished, we have, as we have said before, taken an extreme case; for it seldom happens that the tinted collodion, matt varnish and paper are all required. Usually, unless the negative be very bad indeed, all that is requisite may be secured with the matt varnish and paper alone. In the foregoing example, the negative is assumed to possess excessive contrast; but, had it been the opposite—it lacked contrast—then the proceeding would have been reversed. Instead of the backing being removed from the lights, it must be carefully scraped away from the shadows, leaving the different films on the lights and middle tints, where required, and these may be further strengthened with the pencil.

Of course, this method of improving inferior landscape negatives is equally applicable in the case of portraiture, and particularly so to negatives of interiors, which very frequently require a considerable amount of manipulation to render them satisfactory. This plan has the further advantage that, if the work, when finished, does not prove altogether satisfactory, it can easily be removed—leaving the negative as it was originally—so that it can be commenced afresh. It is almost needless to mention that all negatives thus treated must be printed in the shade, otherwise the sophistications may show in the print.

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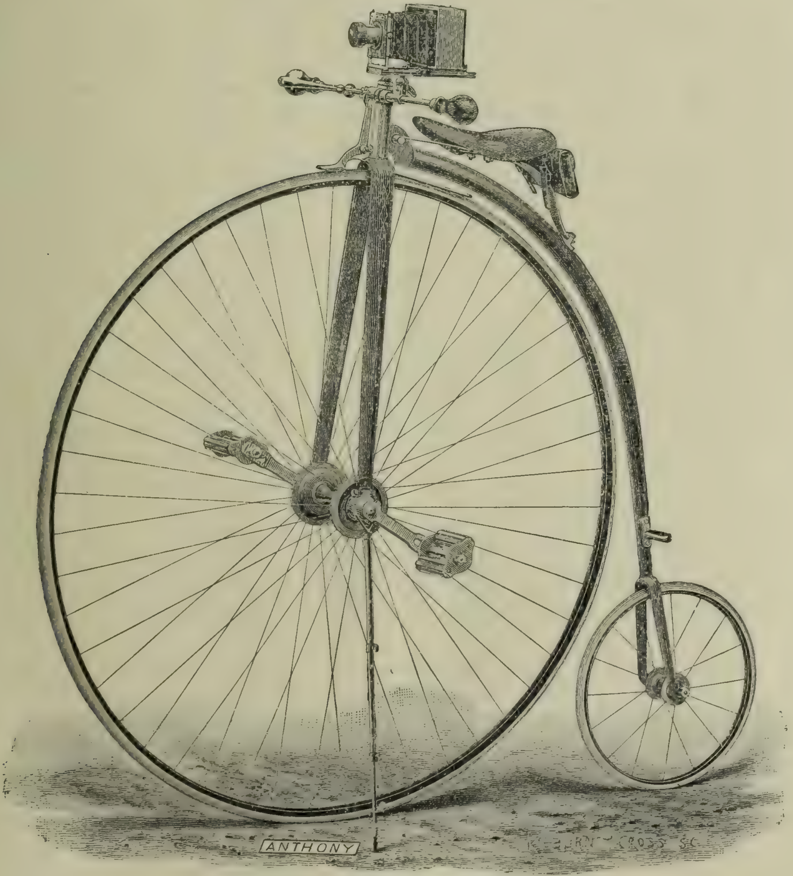

PHOTOGRAPHY FOR WHEELMEN.

During these delightful Fall days we know of no greater pleasure than a spin along the country roads on a bicycle. The bracing air, the easy exercise given to all parts of the human frame, the delight of the eye with the surrounding scenery, gives new life to a man, which is not to be obtained with the same facility in any other known manner. To add further zest to these rides on the wheel, the art of photography with the modern dry plates lends a peculiar aid. As the rider spins along, his eye catches some little bit of scenery, some quiet nook with bubbling water, or some exquisite vista stretching in the distance, that he would gladly fix in some more permanent form than upon the tablets of his memory. To make such a record possible, the manufacturers of photographic materials have devised very portable forms of apparatus. Our publishers are manufacturing an outfit of this character that leaves nothing to be desired as to completeness, lightness, and last, but not least, moderate price. We give on preceding page a cut of their neat little Bicycle Camera, adjusted ready to take a picture from the back of the wheel steed.

By means of a very good single achromatic lens, a picture 3¼ x 4¼ inches can be taken, and from having seen the work of these lenses, we believe they leave nothing to be desired as to their good quality. As will be seen by the cut, the camera is attached to the handle-bar of the bicycle by an universal joint, which allows of taking pictures in any direction without turning the machine. Another neat device is a kind of monopod (if we may coin a word), which is adjusted against the hub of the wheel by means of a Y-top and has adjustable extension to reach to the ground. This sliding brass foot telescopes and shuts up into a length of only about sixteen inches, making a very effective means of turning the bicycle into a rigid camera stand. The camera, lens and plate holder are fitted into a sole-leather carrying case with a shoulder-strap, and the whole weighs only two pounds. With such a slight increase in his *impedimenta*, the bicyclist can add greatly to the pleasure of his journeyings, by capturing many pretty scenes that will serve as souvenirs of his rambles.

THE "GENESTA."

WE have seen one of the most remarkable instantaneous views of this wonderful cutter that was ever taken by photography. The picture was taken upon a 17 x 20 Stanley plate by Mr. W. E. Purviance, using a Dallmeyer lens and the Prosch shutter. The remarkable sharpness of this very large picture is well worth seeing; every rope, block and piece of rigging stands out as if cut by an engraver. From the pennant at the mast-head to the lines under the bowsprit, each delicate piece of light and shade is clear and cleanly cut; even the seams in the sails are distinctly seen. The picture is on exhibition at the office of our publishers.

VIEWS ABROAD.

THE bathing of dry plates in a hypo-soda solution 1:5,000, before development, has continuously proven excellent in our hands. We develop Azaline plates in this manner only, and obtain not only very harmonic negatives, *remaining clearer in the shadows than under ordinary development*, but the time of development is shortened considerably.—*Photographische Mittheilungen.*

AT a meeting of the Vienna Photographic Society, Dr. Hornig, who resigned his position as president of that society on account of ill-health, was declared an honorary member, and received the society's large gold medal. As his successor, Lieut.-Col. O. VOLKMER was elected, well known as a celebrated heliographer. His name is sufficient guaranty for a successful future of the society.

MR. CARL SACHS, of the firm of John Sachs & Co., presented to the Berlin Society a tripod made of bamboo, weighing only 800 gr. The legs telescope and require very little room. Considering the material, the stand showed great rigidity, and to prevent telescoping of the legs, it is held tight in the same manner that bayonets fit a musket.—*Photographische Wochenblatt.*

A SCIENTIFIC revolution of the first importance is foreshadowed by a new method of preparing light-sensitive selenium plates, just discovered by Mr. Charles E. Fritts, of New York. A paper on the subject was read recently before the Berlin Academy of Sciences by Dr. Werner Siemens, who described Mr. Fritts' plates as consisting of a thin homogeneous sheet of selenium spread upon a metal plate, and covered over with a fine gold leaf. The illumination of the gold leaf by direct sunlight, it appears, increases the conductivity of the selenium plate to an enormous extent. Some of the plates sent by Mr. Fritts to Dr. Siemens showed very curious properties, for instead of showing sensitiveness to light, they generated electro-motive force. Writing later, Mr. Fritts says he has discovered the conditions upon which the electro-motive light action depends, and with more perfect means for constructing the plates, he believes he can accomplish the conversion of the greater portion of the energy of light into electrical energy, and, if so, we may, ere long, see the photo-electric plate competing with the dynamo-electric machine itself.—*Photo. News.*

IF an enterprise contemplated by a London firm proves successful, England is within a measurable distance of illustrated daily papers. From a circular which has been recently issued, we learn that the patentee of what are called "type-photographs" proposes to supply newspapers with blocks, so that any editor can, if he pleases, enliven the pages of his paper with pictures which, if not very artistic, will be accurate. To quote the circular: "Portraits and scenes of general interest will be produced regularly as the events of the day bring them into public notice, and lists of those on hand will be published for the information of customers, so that they can exercise their choice." The patentee proposes to begin the manufacture of type-photographs in a few weeks at central works in London. It must be confessed that the specimen photograph which accompanies the circular mentioned is not much better than an exceedingly rough wood-cut, but in cases of exceptional interest newspaper readers are not very critical so long as the likeness is preserved, and these type-photographs may answer.—*Photo. News.*

AT a meeting of the London and Provincial Photographic Association, Mr. F. York gave an account of his visit to the United States and Canada, and made the following interesting remarks: "Those English photographers who think of going to America to make plates had better stay at home; there are about five hundred makers of plates in the States, about one hundred in Canada, and the 'ring' which had been formed is broken up. English plates are used a great deal in Canada, but, he thought, very little in the States. The most rapid plates he had ever used were of American manufacture. He had taken a view across the St. Lawrence with one of these plates, using a drop shutter and *f*-32 stop, but the plate was over-exposed. The 'Stanley' American plates were particularly good."

WE have not yet had any wonderful amount of heat in the atmosphere, still, hot weather is bound to come, and following in its train will be complaints of frilling and blistering in gelatine negatives. A New York gentleman has recently been explaining that he got rid of the tendency to frill by raising his plates to a high temperature before exposure; this, he said, stopped the tendency to frill, and did not interfere with the sensitiveness. Another gentleman obtained the same results by heating the developing solution; while yet another has stated that a preliminary soaking in chrome alum solution was a thorough deterrent, and did not interfere with sensitiveness, though it caused a difference in the appearance of the image. There is, however, one plan, the simplest of all, which we brought before our readers some time ago, but which will well bear repetition at the approach of such a frill-provoking period of the year. The method simply consists in fixing the plates in a diluted hypo solution, one of from fifteen to twenty per cent. in strength, not more; and if, in addition, the plates are allowed to drain five minutes before washing, frilling of a most refractory character may in the majority of instances be entirely obviated.—*British Jour. of Photography.*

PRINCE ROLAND BONAPARTE has been spending three months traveling in Lapland. He has brought back a fine collection of photographs of natives. The photographs have been taken in accordance with Broca's instructions, each individual being represented in full face and in profile. It is intended to issue sets of these photographs in a similar form to those of the natives of Surinam, which the Prince issued some time ago, and generously distributed to various scientific institutions. The people of Surinam were exhibited at the Amsterdam Exhibition, and their photographs, with illustrations of their dresses, weapons and implements, form a superb and valuable anthropological album.—*Amateur Photographer*.

THE hon. secretary, at a recent meeting of the Halifax Photographic Society, brought forward and carried a motion which is worthy of notice. It was to the effect that medals or diplomas should be awarded to the writers of the best papers upon photographic subjects read before the society during the winter session. In the case of most of our societies there is no difficulty in obtaining practical men who know the manipulative processes of photography thoroughly, and who can produce first-class pictures. But the number of those who can tell their brethren, in clear, unhesitating language, the *modus operandi* for obtaining good results is comparatively small. To encourage the cultivation of good descriptive and technical writing is an object well within the scope of photographic societies. The example of the Halifax photographers might, with advantage, be followed elsewhere. —*Amateur Photographer*.

IN the electrical department of the Antwerp International Exhibition a number of fine photo-micrographs of diatoms are exhibited, which were made by Dr. Henri Van Heurck, of the Antwerp Botanical Gardens. The *Photographic News* says the professor lays particular stress upon the use of the incandescent electric light as a means of illumination in this work, and gives preference to Mr. Stearns' diminutive Swan lamps as constructed for microscopic purposes. When we mention that the amplification is in some cases 1,200 diameters, the photographs exhibited show that this electric illumination produces highly satisfactory results.

COMPLAINTS of frilling, as a matter of course, have been more numerous, but, owing to the improvements which have so continuously been made in the manufacture of plates, this evil is far from being so prominent an accompaniment of hot weather as used to be the case. But as, according to the old proverb, "misfortunes will happen in the best regulated families," so plates that frill will appear in the best regulated dry-plate manufactories. In the first place, then, it must be noted that the stronger the solution of hypo is made the greater will be the probability of frilling setting in—more water goes into the film during washing than hypo goes out; hence, in hot weather, when the gelatine is naturally softer, unless it be of a tenacious character, its increased bulk causes it to leave the glass, that is, to frill. Secondly, as the object is to have as little hypo in the film as possible when commencing to wash, and as there is a practical limit to the reduction of the strength of the solution, the object may be partially attained by well draining the plate before placing to wash.—*British Journal of Photography*.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

FOURTH DAY—AFTERNOON SESSION.

President LANDY in the chair.

The *President*—The first business in order will be the reading of a paper, entitled "The Background: its Use and Abuse," written by G. M. Carlisle, Providence, R. I. (See page 490.)

Dr. E. L. WILSON, of Philadelphia, then read the paper.

On motion of Mr. Cramer, seconded by Mr. Gentilé, a vote of thanks was tendered to Mr. Carlisle for his paper.

The *President*—There will be a meeting of the Investigating Committee at the Genesee House this evening at 7 o'clock. The Committee are as follows: Mr. H. S. Bellsmith, Mr. H. McMichael, Mr. Pool, Mr. W. H. Potter and Mr. Joshua Smith.

The next subject will be the appointing of the vice-presidents.

Mr. COLLINS—I move that the names to be put upon that list be referred to the Executive Committee. Agreed to.

Mr. RANGER—The new Executive Committee or the old Executive Committee?

Mr. WILSON—There is no old one. The hour of 8 o'clock approaches, when the demonstration of the Eastman Spool will be made. I suggest that three young, strong photographers go down in the house and notify the gentlemen that this demonstration is about to take place. We will get fifty or sixty more people here to see it.

The *President*—Will some of the members go down into the hall and notify them to come up?

Mr. INGLIS—There was to be some discussion on prizes. I move that that be postponed to an informal meeting among ourselves.

This resolution was seconded by Dr. E. L. Wilson.

Mr. COLLINS—I think there is nothing in the whole business that needs looking after any more than the prizes. If there is anything to be done or to be said upon that point, it should be said; if not, let us go home.

The question was then called for and agreed to.

One of the members asked what had become of the question box. The President replied that it had been disposed of yesterday, and the questions unanswered would appear in the journals and there would be an opportunity to answer them. Mr. G. A. Douglass, of Chicago, not being present, and his paper not being on hand, it was not read. The paper of W. A. Armstrong, entitled "Our Mistakes," was not read on account of the absence of Mr. Armstrong.

The *President*—I don't see anything else for us to do but to hear the description promised us by the gentlemen from the Eastman Dry Plate and Film Company. Unless some gentleman has something to offer, we are ready for that business now.

Mr. INGLIS—If there is nothing more to be said, I will make a suggestion; it may be out of order, like a great many other things I have said; but in the awarding of these prizes I think it would be well if there should be some subjects given out and what they should be awarded for; to make up a certain kind of composition, and the lighting of subjects. I have always taken a very great interest in the lighting of the head. That is the principal work that a photographer makes his living by—the lighting of the head. I have very seldom seen a head lighted in an artistic way. It may seem a little arrogant on my part to say so, but I say I don't think I would be contradicted directly in saying so. I might say that my attention has been drawn to this matter, and if you will direct your attention to it and will observe those pictures in the German collection, you will notice the lighting upon the heads, and you will see that it is accomplished in a very different manner from what we have it in the American collection. I think it would be well worthy of a prize by this association. I think that such a prize might be given to some one who would bring forth a higher state of perfection in the lighting of the head. I do not go into the subject of the lighting of the drapery or things of that kind, but I would confine myself entirely to the head from an artistic standpoint.

Mr. COOPER—There is a suggestion I would like to make with regard to this very matter of the exhibition of pictures coming from all over the country. I have found quite a number of men who made the remark that they should be very much pleased indeed to send a collection of their pictures to be exhibited at the convention, if it were possible for them to make any such display as the men who were very generally known could do. In the first place, even though they place an exhibit here—or wanted to—they were deficient in the subjects in a great many cases, and in the means for putting the thing before their brethren in the condition in which they would like to have them appear. Now, I think a too elaborate display, that is, too great a display of pictures, on the part of any one man is rather overdoing the thing. I think, at most, twenty real first-class pictures, which are or ought to be the gems of any man's collection, could be placed before the members of the association, and it might be limited to that number; and if it was, that there would be a very much larger number of men who would send their work here, and who would feel that they were not cramping themselves in doing so, or placing themselves in an unequal light before the fraternity. No question about it, gentlemen, that the question might arise—well, we are not overstocked with pictures even now with a large display made by some—why? Because a few make a large display there are many who cannot, because they cannot afford to send pictures hundreds of miles in great quantities here; they cannot afford to place them in elegant gilt frames before their friends and those who might give them advice and criticism, which would be of just as much value if given in a friendly way. I don't know that the suggestion is worth anything; if it is I hope you will act upon it, and do some good in that way by bringing other members to the association. I believe this would be a step in the right direction.

Mr. RANGER—I notice the pictures which have been sent here from Europe, mostly Germany, and also England, are remarkable specimens, and I presume to say that has been quite a large expense. I think it is quite befitting for us as a body to take official recognition of that fact and to extend a vote of thanks for their display. It has been a great gratification and a source of profit to us all.

The *President*—That has already been attended to.

Mr. GENTILÉ—I move, Mr. President, the Executive Committee prepare an engrossed vote of thanks of this association, and that they be directed to send a copy to each one of the gentlemen included in the number of foreign exhibitors. Agreed to.

Mr. BELLSMITH—Why cannot this be done through some association in Germany or through Mr. Gennert?

The *President*—I think that the photographer deserves the credit for his picture.

Mr. MCMICHAEL—No association had anything to do with it. It has been done through Mr. Gennert, who invited the foreign exhibitors.

Mr. EDGEWORTH—The understanding was that in his letter he solicited the pictures himself.

Mr. BELLSMITH—It occurred to me, sir, that this was an excellent time to select some particularly excellent example of photography from our American exhibits and send them to Germany as a return compliment for those which have been exhibited here, that they might be exhibited during the coming year.

The *President*—I suppose that that must be done by the individuals themselves. You do not mean that the association shall select the best subjects.

Mr. BELLSMITH—Yes, sir; I think it would be a good chance for the association to show their appreciation, and they might appoint a committee to select the cream of the whole display down stairs.

Dr. WILSON—Where is the money to come from to pay for them?

Mr. BELLSMITH—That could be provided for.

The *President*—You would have to go to the different owners.

Mr. COLLINS—You would have to find out whether the owners would consent to do this.

Mr. MCMICHAEL—Had we not better wait until we get an invitation to send the pictures abroad.

Mr. CLIFFORD—I understand that these pictures in the foreign exhibit were solicited and sent here through Mr. Gennert. Would it not be proper that the pictures should pass through the same medium, and that the vote of thanks should pass through the same medium? I think that it should pass through him. I don't know that I am mistaken, but I think that Mr. Gennert is the one who solicited these pictures for us.

The *President*—A vote of thanks might be given to Mr. Gennert in addition.

Mr. INGLIS—The exhibition that we are to receive from the Eastman Dry Plate Company is ready to be given. I think that we should proceed with that.

Mr. COOPER—We are ready just as soon as you are.

The *President*—We are ready; we were only waiting for 3 o'clock to arrive.

Mr. EDGEWORTH—I understand there was a question before the house; some man made a motion.

The *President*—The motion was that a vote of thanks be tendered. That has already been done.

Mr. POOL—I think that we might proceed now with what is before us.

Mr. COOPER—With your permission, Mr. President, I will now address the association on this subject. Ladies and gentlemen, and Mr. President, with the aid of my friend, Mr. Jones, who has become extremely skillful in the manipulation of this roller holder, which we are about to present to you, I will try to explain some of the few advantages which are to be derived from the use of this new process, which has been brought out with an extreme degree of hard work and the expenditure of a large amount of money, and with the hope that the photographers of this country, as well as others, will show that they can appreciate something that bears the mark of public spirit on the part of the men who have done so much toward progress. This is a camera; I don't know if any of you have seen one before, but I guess you have. [Laughter.] This is a roller holder; a great many people in the world have seen that in their mind's eye; but hardly before this convention has it been presented to the world in the shape in which it can be considered of practical value.

The mechanism of this machine is simple. A great many of you may have had an opportunity of seeing it. If you have not, I will take great pleasure, with the assistance of Mr. Jones, in showing it to you, and pointing out its various uses. I wish to say right here that we prepared an exhibition for this convention with an immense amount of hard work. The process by which the exhibit of pictures was made really came into being within six weeks. We had been working with the object of perfecting a film process, and with that object it was determined to make use of paper for the support of the film. There were various things that suggested themselves, but that which seemed to be certainly the one that we could best adopt was paper. It had frequently been tried before, but in most cases had failed. Paper was adopted. A coating of soluble gelatine was placed upon the paper, after which it was coated with an insoluble emulsion. It was then, after exposure and development, to the usual treatment of the exposed plate, squeegeed upon glass that had previously been coated with a rubber solution to admit of its stripping. Then we treated it to warm water, which dissolved the gelatine solution and allowed the negative to float off. The negative was then in a reverse shape on the glass. Being reversed, it could not be used for portraits or scientific work without retransferring it, and it became necessary to coat a plate with a solution of gelatine, which, when dried, was peeled off, leaving a negative of about this form. I think I have one with me this afternoon, which you can pass around. [Negative exhibited.] They will see the piece between the film and the negative—the paper negative. Just about the time that that process had been perfected, and all the difficulties which had presented themselves had been swept away, it suggested itself to the management of our concern to make an attempt to render the paper transparent by means of a medium of some kind. Various things were tried, but castor oil at last was adopted as the most satisfactory, so far as we know at the present time. An opportunity is open for any gentlemen who possess the talent for investigation to experiment in this line, and if they find out something that is better than castor oil, and will give it to us, we will feel deeply indebted to them. At present all we can say is, that we consider that the best thing for the purpose is castor oil. That is the best that can possibly be obtained, better than any other article that I know of, or that we know of. This process was presented, and the necessity arose for some method by which the exposures could be correctly made. Many attempts had been made to make paper negatives, but the difficulty was how to place the paper in such a position that the photograph could be made easily and have it securely fastened to the support. This roller holder was one of the first things that suggested itself, and it has been worked out with a great deal of care.

My friend, Mr. Jones, who knows more about its manipulation than I do, will now show how it is operated.

Mr. JONES—We have here two rollers; one is the stock spool, and the other to receive the exposed surfaces; the film paper is extended from one to the other roller. This is a film spool, on which there are twenty-four paper films prepared for twenty-four exposures, and this is the manner in which it is inserted in the holder. There is a pawl on each wheel to take up any slack that may be caused in reeling off the paper. You will notice, gentlemen, that this paper passes over a table which is absolutely flat and there can be no warpage. There cannot be any possibility of any inaccuracy in focusing on a surface like that. It is flatter than the glass that you ordinarily get. The receiving spool here which takes up the paper that has been exposed is provided with a clamp, to which this end of the paper is first adjusted, and admits of its being rolled from one spool to the other. Four clicks gives the length of the paper. This is a six and a half by eight and a half. One click is one-quarter of the length; four clicks, and you get the full length. At every click we have a perforation in the paper which you can feel and count in the dark room. The impression is very distinct, so a man, by running his finger on the surface, is able to measure off the distance accordingly. I will put this paper on, and mark it, and turn the roller so you wil see how it is done. [This demonstration was made.]

Mr. COOPER—So much for the roller holder exhibit. Let me relate a little incident connected with it that I think will be well to mention, showing the manifest advantage which it places in the hands of a man who is likely to meet a brother photographer who is somewhat of a crank. My friend Jones went on a little excursion when the Wild West show was in Rochester, and he received permission from Buffalo Bill (Mr. Cody) to photograph the Indians in their lodges. It happened to be raining very hard, and my friend was going to take a group, and while he was in the act of making the photograph, a photographer happened to see him, and he ran up in front of the camera and said to Mr. Jones that he possessed the exclusive right to photograph the show. Mr. Jones said to him, "I don't want to be mad with you, but I will show you one of the most surprising things you ever saw in your life. You just turn this little crank here, one, two, three, four, and then you take off the cap here, and you count one, two, three, and the picture is made." The photographer was very much astonished. He was very much interested in watching the operation, and he did not understand it, but Mr. Jones had taken his group, and he surprised him very much by showing him afterward an elegant print from the negative. So, at least, that is one of the advantages. Now, there are a great many others. I will not tell you all of them. I was asked about retouching, and whether it was possible to retouch upon one of these negatives—upon one of the negatives greased with castor oil. Now, I want to say that it is a very singular fact that this gelatine film produced in this way with the oil on the film does not take the pencil very easily before it is oiled, but almost immediately after you have oiled it, you can find there is a regular tooth to it. You can almost hear the sound of the pencil. You see how easily you can write on it, and you can do your retouching as easily as you could desire. You can also remove any marks or spots on the negatives. You can spot out anything. It takes a very strong mark. The consequence is, you can readily dispose of any little defect that there might be in the negative. I would say further that there is something that has never been done before. I am confident I can say the knife can be used on that surface. Any gentleman can take a look at that, and you will say that it is not only susceptible of being very strongly marked with the pencil, but you can take your knife or piece of stump, and with a little emery paper on it, mark your name on it—you can write on it, and that too, without scratching the film at all. Just look at this and hold it up to the light, and you will notice that it is possible to do as I say. It is possible to take your high lights out. You will see the name of Sarony written upon the surface of the negative without scratching or abrading the surface in the least. I don't think any gentleman ever did that or tried to do it with a plate, unless it was a plate that was not good for anything. So far as retouching is concerned, I think that any objection on this score can be laid at rest. Another point of value is the large work which can be done. This morning we developed, over in our developing room on the other side of the street, three 20 x 24 negatives all at once, one on top of the other, pulling them right over each other in the developing dish. I don't know but what we will have one or two of these negatives up here. Now, the whole operation was concluded in from eight to ten minutes. Three 20 x 24 negatives were developed all at once, and very fine negatives too.

I mentioned last night that I used the day before the diluted solution of the one-sixth dilution. That is two ounces to 36 ounces of water. To-day when I made that development I used two ounces to sixty-four ounces of water, and got elegant negatives, brilliant high lights and color, and beautiful shadows. Now, the new process has been devised, it is supposed that the film is susceptible of being used only in the roller holder. That is not so. We have provided a very neat little mechanical device for exposing the film which you will see here. There is a piece of wood which is composed of woods the grain of which is cut in different ways. This is done so that there will be no warping. It lays perfectly flat. It is extremely light. Going into the dark room and taking out the film, you lay it down and you take this little frame which has been stamped out, and you will see that it will fit very accurately around that. You place it down here like that, and there is your plate. You put that into your plate holder—your ordinary wet plate holder or your dry plate holder. One of these will go in very easily, so that you see it is not absolutely necessary that a man should go away from here supposing that he is bound to buy a very expensive outfit to try it. It is within the reach of anybody and everybody. I think there is very little use in my taking up your time any further. You heard last night what I said on the subject of development. You heard also what I had to say about developing solutions of a very strong character. There is the developing solution. That will keep for ten months. I put in two ounces to sixty-four ounces of water, and develop the negatives full of brilliancy, detail and softness.

A MEMBER—Is your developer all one solution?

MR. COOPER—All in one solution. It is combined and concentrated; it is concentrated solutions, and combined afterward. You can make concentrated solutions, one of the sulphite and one of the soda, and you add your quantum of pyro and put them together in equal proportions, and they will keep indefinitely.

A MEMBER—I would like to ask how that will compare in price with other dry plates.

Mr. COOPER—In the case of very large work, about one-half the price; in the case of small work, 11 x 14, probably about two-thirds. I don't think any less than that—about two-thirds of the price. You see the difference in the price of the large glass is quite an item. If there are any questions which the gentlemen would like to ask relative to this matter, I would be very glad to answer them to the best of my ability.

A MEMBER—Will you say how you treat negatives preparatory to printing?

Mr. COOPER—You say you want to know how it is oiled before it is printed. We found upon endeavoring to oil it that it can be done quite readily by simply rubbing the oil on the negative, or by subjecting it to any ordinary degree of heat. The consequence was, we laid the paper down upon a bit of soft paper, and putting castor oil over the back and rubbing it around, and treating it with a very hot clothes iron, such as is ordinarily used in laundries, when quite hot, and rubbed all over, the consequence would be that the air in the cells of the paper would be expelled directly by the heat, allowing the oil to take its place. In the case of the iron not being hot enough—you know the remedy for that—you simply heat your iron again and go on. In the case of a negative not being properly washed, all that you have to do is to continue the operation until you have evaporated all the water of crystallization from the crystals of hypo that remain in the film, and when all the water is out you will get the oil in. So that if you find any trouble of that kind you will know what the cause is—the negative is not properly washed from the hypo, or that your iron is too cold. You can remedy both of these things very easily, one by heating the iron, and the other by a little perseverance.

Mr. CLIFFORD—What defects have occurred that you know of?

Mr. COOPER—I know of none.

Mr. CLIFFORD—Does this paper require more or less washing than glass?

Mr. COOPER—It requires less.

Mr. CLIFFORD—How long do you keep it in the running water?

Mr. COOPER—Not more than fifteen minutes. For large negatives we put in quite a number of them together, and in this way they are washed quite thoroughly. Although they are washed in a little less than half an hour, it would be safe to give half an hour's washing.

Mr. GENTILÉ—This process is patented, is it not?

Mr. COOPER—So I believe.

Mr. GENTILÉ—What is the difference between this and the Warnerke film?

Mr. COOPER—I do not happen to know how the Warnerke film is made, or I should be able to state the difference. If you will tell me what you know of the Warnerke film, I can, perhaps, make a comparison.

Mr. GENTILÉ—I will call upon Mr. Taylor to explain that. I think he has seen it.

Mr. TAYLOR—The Warnerke system consisted of two rollers the same as that, in every way very much the same, only the paper was coated with a collodion emulsion instead of a gelatine emulsion. In other respects I think it worked the same. I have seen it work many times, but I don't know whether it was patented or not; it was manufactured to be used extensively.

Mr. COOPER—Did Mr. Warnerke ever put his film on the spool himself; that is, did he ever sell his films on the spool?

Mr. TAYLOR—All I got were put on by him.

Mr. GENTILÉ—Will you state how you keep the negatives after they are ready to print?

Mr. COOPER—We find that the best means of keeping the negatives, is to place them face to face and back to back in an ordinary printing frame, and put a little pressure on them. They will keep perfectly flat. It is not absolutely necessary to use your printing frame for the purpose. It would be a very simple thing to arrange a portfolio or envelopes in which they could be kept. They could be placed one on top of the other, and the pressure of their weight would prevent the necessity of having anything like pressure from any other source.

Mr. GENTILÉ—How many negatives can be developed in the dish at once?

Mr. COOPER—Sixteen of the small sizes and as many as four of the size of 18 x 22 can be developed at the same time.

Mr. BEIDEL—Are they liable to become opaque?

Mr. COOPER—Decidedly. The time will come when the oil will dry out, as it will out of any other substance. As you put it in before you can put it in again, if it becomes necessary to make use of your negatives again. The oil is evaporated; put it down; re-oil it; the re-oiling is done in a short time; it needs no drying after oiling. A great many gentlemen will hold the negative so.

A MEMBER—How long will it take to dry?

Mr. COOPER—I would say there is no necessity for its drying. Alcohol will entirely remove the presence of any oil on the surface, and you can print from it immediately.

Mr. GENTILÉ—Can it be printed from both sides?

Mr. COOPER—I have no doubt it can be done, but I don't think the print will present quite as perfect an appearance printed through the paper as it would printed from the surface of the film. I hardly think it possible to expect it would. At any rate, it would present so little difference as to be hardly discerned by any but an expert. It can be retouched. There is no difficulty about the focus.

BY A MEMBER—Is the paper of the same sharpness as that of the plates?

Mr. COOPER—I would say that that is so practically. We make our tests every day at the factory of these films that we carry with us, and there is not a fraction of difference in their sharpness from that we have shown you here. We have found no difficulty at all, and we never saw any indications whatever of a lack of sharpness. You can examine the ground glass very carefully, and your negative will be equal in every respect.

Mr. POOL—Immediately after washing, how do you dry these paper negatives?

Mr. COOPER—There are two ways in which it may be done, but neither is an absolute necessity. You can lay your film upon ordinary blotting paper; or squeegee it down upon a plate of glass coated with a rubber solution to prevent adhering to the glass; or use the ordinary black rubber, and as soon as the negative dries it peels off, and falls off from its own weight.

Mr. GENTILÉ—Is there any extension in developing and washing these negatives? Does the paper extend at all after being ironed and oiled?

Mr. COOPER—It extends while it is being washed, but it is a singular thing it does not extend at all during the oiling. A gentleman made the remark to me yesterday that it could not be possible that anything else but that should be the case. I said, here is one of the negatives that has been oiled and dried, and here is another one that has been dried without being oiled, and you can lay one upon the other and cannot tell any difference between them. He examined this very closely and thought that he could, but if you would take a microscope you could not do it.

A MEMBER—How large was the negative?

Mr. COOPER—Six and a half by eight and a half.

Mr. GENTILÉ—How much was the 5x8 negative extended?

Mr. COOPER—The extension would be about in proportion to that which you would find in albumen paper during the time of its being wet. Have taken the same paper, coated with a film, and dried it by a register, and found that after oiling and before oiling and before exposure it was identical.

Mr. GENTILÉ—On drying it retracted again.

Mr. COOPER—Yes.

Mr. GENTILÉ—You consider there is no difference between that and the glass negative?

Mr. COOPER—Not at all. I would as soon have the one as the other.

Mr. GENTILÉ—You think that it is mathematically correct—the register?

Mr. COOPER—I think that the registration is absolutely and mathematically correct. Any gentleman can experiment with that very easily and can measure it. The only other thing I want to remark, and that is a remarkable thing too, that you can make a series of panoramic negatives. You mark your spot where you begin and where you leave off, and you take one negative, and then turn your camera until you bring it in such a position that the next picture registers just directly in line with the first, and so on, and after you have got your negatives lay one down on the other, carefully adjusting the corresponding parts, and with your knife you can cut out and register them perfectly. The advantage of this is that there is a possibility of being able to make a negative of almost any size. A person told me of a negative made of several young ladies registered upon the same plate, so as to make one head, and thus obtaining an ideal head. A man might be photographed full-face, and then, by turning his head by degrees, you could photograph all around until you got to the back of his head, and then you could take out your negatives and spread them right out and see what you had got. You can see how easily that might be possible.

Mr. INGLIS—I would like to ask Mr. Croughton if he has made any investigation in respect to these films or their use in England.

Mr. CROUGHTON—I think I ought to be familiar with them, as they have been introduced in England. I will ask Mr. Cooper if that is not so.

Mr. COOPER—That is one of the things I am not now prepared to speak about.

Mr. CROUGHTON—At the last convention I passed around prints made by Morgan, which I obtained a few days before I sailed for this country, so that this process is not new. They were printed from paper negatives, and not upon an oiled surface. There was no amount of texture shown at all. The only difference I see in this process is that the paper does not seem to be quite so perfect as that used by Mr. Morgan. Mr. Morgan's paper was very fine and very thin, which obviated the necessity of oiling or waxing in any way. This process was used before I left England, twenty months ago, and it was shown to the members of the Chicago Society, and if there are any members present of that society they can confirm what I say. They were shown side by side with a gelatino-bromide negative on glass, and another made with the same emulsion on paper, and when this was shown they invariably took the print from the paper negative, and this was chosen as being the one from the glass, because it was actually more perfect than the glass negative.

Mr. COOPER—That may be so. In reply to Mr. Croughton, I would say that this process is not presented to the public as new, as having never been attempted before; but I think when Mr. Croughton makes the statement that it has been perfected anywhere else, that he makes a statement that is not quite correct.

Mr. CROUGHTON—I hold the reverse opinion.

Mr. COOPER—It is not claiming a substance upon which a negative can be made. We are perfectly willing to admit that there are other gentlemen who are able to make a bromide of silver paper, but if you will look back upon the folios of the *British Journal of Photography*, you will find that my statement is verified, and I think by Messrs Morgan & Kidd themselves, to the effect that it was perfectly easy to make a negative on paper, but the difficulty arose in having the proper means of exposing it. This, gentlemen, is a proper means of exposing them and is most decidedly and emphatically new.

Mr. INGLIS—That may be correct. It is irrelevant to the question that Mr. Croughton brought up.

Mr. COOPER—I do not exactly see why.

Mr. CARBUTT—I think Mr. Croughton and many of the members here are laboring under some misapprehension as to what is claimed by this patent. I believe there is no patent claimed for what is exhibited to you this afternoon in the way of the paper film negative.

Mr. COOPER—None whatever.

Mr. CROUGHTON—It is a mistake, of course, then.

Mr. CARBUTT—The patent is not for the film, but for the roller, as I understand there is no patent for the film.

Mr. COOPER—There is none.

Mr. CARBUTT—I think there has been a misapprehension. The patent is for the means of carrying the paper into the camera.

Mr. COOPER—That is just it.

Mr. CARBUTT—That is an entirely new and novel means.

Mr. COOPER—That is what I said, and I think it is powder wasted entirely—the remarks that have been made.

Mr. INGLIS—Whether it is any powder wasted or not, I do not know; but I think it was distinctly stated that this was a patented process. That was the impression that I got, and I think many others got the same impression.

Mr. COOPER—I do not see how they could have got that opinion, for no such statement was made.

Mr. INGLIS—I beg to differ once more; it has been put forth that it was a new process, and that was stated last night in the paper, one of which I received from yourself.

Mr. COOPER—Well, this thing can be settled. I don't know that I came here with the object of entering into any argument. That was not the object for which I came here. But, if it is necessary to go into an argument on that, of course I shall be very glad to enter into any discussion with any gentleman when I have made a preparation to do so. I have no objection to doing it then, but, at present, my object in coming up here was to show just as far as I could what I had to show [applause], and if I have said anything by which I have trod upon anybody's toes, I will apologize. I came up here to give my experience, and to show you this roller; if it is not worth anything, let it go where it belongs.

Mr. CARBUTT—Mr. President, my remarks are not intended to show that there is anything contradictory in what has been said, not in the least degree. I have been quite familiar with photographic patents and with the manufacture of gelatine paper; and, if I had not been so familiar, I should have been under the impression that what Mr. Cooper has been showing us was an entirely new thing. There is quite a difference between what he has in use and what has been shown us, and that which was announced in the issue last December, and all credit is due to them for it, and for the most ingenious means of exposing the paper. They have a right to it, and they are entitled to full and due credit for it. It is a great step in the right direction, and it will open up a new field of labor and will be a great benefit to the profession.

Dr. WILSON—Now that Mr. Cooper has finished his remarks and his demonstration, I move that a vote of thanks be tendered to the Eastman Dry Plate and Film Company for what has been exhibited to us here this afternoon.

This motion was agreed to.

Mr. POTTER—There is one thing about this paper that has raised an inquiry in my mind, and that is as to the use of the castor oil upon these negatives. I have found in handling albumen paper that if you get the least grease from your hands upon it, it affects the sheet in washing. I should think there would be some danger in printing the negative in the sun in very warm weather, and the inquiry would arise whether the oil would affect the chemical salt in the paper.

Mr. COOPER—It might possibly seem like a bold statement that I make, but it has been proved that by this method of working the paper there is no difficulty of that kind. The matter has been tested thoroughly. This difficulty is only imaginary.

Dr. WILSON—A motion to adjourn is now in order; before that motion to adjourn is made, I move that the usual vote of thanks be tendered to our officers, our exhibitors and the gentlemen who have paid us so much attention, and for the patience we have had from the President, and so-forth—that the usual quantity of thanks on such occasions be given to all the parties interested, and especially to the Executive Committee, who have so diligently attended to the business laid out on the programme.

This motion was seconded by several, and agreed to.

The *President*—It is with much regret that I now bring this convention to a close. In doing so, I congratulate you upon the harmony and good feeling which has characterized the sessions from beginning to end. I also express a hope that what you have seen and what you have heard and what you have done will prove of great service to you, and in the future become so generally known among the fraternity at large as to secure for photography and photographers a better position in the eyes of the world; better work and better prices. With warm thanks for your patience with me, as your presiding officer, I wish you a safe return to your studios, and bidding you a kind farewell, I now declare this convention adjourned *sine die.*

ERRORS IN THE REPORT OF OUR PHOTO CONVENTION.

THE short-hand reporting of discussions of a scientific or technical character in large assemblies is of great difficulty, owing to the many phrases and peculiar terms used in them, and the distance which the speakers are from the reporter, which makes it hard to understand them properly. That there are many errors in the report of the proceedings of our last convention at Buffalo is evident to those who took part in the discussions and to all who read them carefully.

In many instances the sense of the speaker's remarks is entirely destroyed, and a far different meaning conveyed to what was intended. I do not blame Dr. Morgan for the mistakes which appear in the report, although believing that I got the worst of it; on the contrary, it is my opinion that he or any man could not have done better under the circumstances; but I earnestly protest against having said such nonsense.

What good can such reports be to persons who were not present, when, as an example, the leaving out or adding of the simple word "not," changes the meaning of the speaker very materially, and renders his advice or remarks very misleading or ridiculous.

I now fully share the opinion of our friend Dr. Vogel, who told me, during the last visit, that he had the same sad experience, and that he would rather not speak in a meeting when a stenographer was present.

Yours truly,

G. CRAMER.

[We publish the above letter from Mr. Cramer, and would remark that it does not apply to the BULLETIN; for Mr. Cramer kindly corrected for us what he said at Buffalo, and this is also true of other speakers. We have published as correct reports as possible, not trying to hurry through.—EDS. OF BULLETIN.]

AUG. 26, 1885.

GENTLEMEN,—Please book me for the BULLETIN. I regard it as first class in every respect.

Yours truly,

P. S. RYDER,

President Syracuse Photographers' Assn.

THE PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

SAN FRANCISCO, Aug. 7, 1885.

THE monthly meeting of the Pacific Coast Amateur Photographic Association was held at the association rooms, 318 Pine street, Thursday evening, August 6th, Mr. Gibbs in the chair.

Minutes of the last meeting read and approved.

The Committee on Membership having reported, Mr. Alexander Cheminant was elected a member of the association.

Resolved, That the Chairman appoint a committee of three members, not present at the last field day, to pass upon the prints presented for competition, and report at the next meeting.

The Chairman thereupon appointed Messrs. Louden, Lange and Gibbs to act as such committee.

A committee, consisting of Messrs. Wandesford, Yale and Babcock, was appointed to pass upon the "Expectations" prize print, and report at the next meeting.

Resolved, That all duplicate books and periodicals belonging to the association be sold to the highest bidder. An impromptu auction was thereupon held, and several dollars added to the funds in the treasury. A large number of prints by Messrs. Gibbs, London, Blackburn, Tashiera, Wagner and Tyler, were passed around for inspection.

Mr. Blackburn exhibited two mounted but unburnished 5 x 8 prints, which created considerable discussion. These prints were made under the same conditions on Anthony's ready sensitized paper. Print No. 1 was made in April, and No. 2 in August of this year. After printing (no acid or salt being used in the washing water) the prints were thoroughly washed and put into a fresh hypo solution without toning. After fixing they were washed in running water for several hours and mounted. Print No. 2 is a bright brick color, as was print No. 1 when first made; but a curious change has taken place in this print, and it is now of a rich chocolate-brown color. There has been no fading and the whites are absolutely pure, the whole print having the appearance of a properly, though rather under-toned, picture.

No satisfactory explanation for this phenomenon could be suggested by any of the members, though Dr. Passavant thought that the paper probably contained a large proportion of citric acid, which, by the action of the "hypo" and exposure to light, had changed the nitrate into citrate of silver.

The prints will be preserved, and other experiments made, as the subject is certainly worthy of investigation.

Mr. Partridge exhibited an electric light for developing, from the Scovill Manufacturing Company. The light worked well, and is very convenient, especially where the dark room is small and easily heated.

It was decided to establish a new class of members, to be known as "non-resident members," with annual dues fixed at $3 per year.

On motion, the meeting adjourned.

W. B. TYLER,
Cor. Sec. P. C. A. P. A.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

MINUTES of the Regular Meeting, held Wednesday evening, September 2, 1885. Mr. JOHN CARBUTT in the chair.

The questions in the box were as follows:

First. "When using a long focus lens, is not the length of the draw of the camera more nearly the same in focusing near or distant objects than when a short focus lens is used?"

With either lens the difference in draw is slight, unless the object is very near and the image of the object large in proportion to its actual size. The nearer the object and the larger its image, the further from the lens will the plate have to be drawn, whether a long or short focus lens is to be used.

Supposing in each case the image of the same object is to be reduced to a certain fixed size with each lens. If to do this one lens requires a draw of, say, one-fourth more than its focus for distant views, the other will also require one-fourth more draw, and this with a long focus lens would of course be more in actual measurement than with a short one.

Second. "How can you get a warm red or brownish tone on a wet collodion slide?"

As a rule, the color of a slide depends greatly on the relative length of exposure, a long exposure tending to give the reddish tones. Much depends upon the condition of the silver bath, which must be in perfect order.

It was recommended to use a thick collodion, also to tone with a weak lemon-colored solution of sulphuret of potassium.

Mr. Carbutt presented the society with a window transparency representing General Grant's Cabin in Fairmount Park. The transsparency was made on one of his gelatino-albumen opal plates.

Mr. A. J. Casseday, representing the Eastman Dry Plate and Film Co., who was present, showed a number of paper negatives and prints from the same; also the apparatus made by his company for exposing the paper in the camera by means of a holder containing sufficient paper to take twenty-four successive pictures.

The holders can be adapted to any camera. The plate is stretched between two rollers at either end of the holder, and passes over a board which holds it perfectly flat and in proper position when the slide is drawn.

After making an exposure by means of a key attached to one of the rollers, a fresh portion of the paper is brought into position, and so on until the supply is exhausted. The holder occupies the same space as three ordinary double holders, while it contains paper for four times as many negatives. The advantage in regard to weight and bulk is, of course; obvious.

Mr. Casseday demonstrated before the society the ease with which a paper negative could be developed. By first wetting it thoroughly with water, there was no difficulty in handling the paper. As the film naturally adheres more firmly to paper than to glass, the danger of frilling is obviated.

In regard to fixing, owing to the paper backing to the film, perhaps it is not quite so easy to tell when the hypo has done its work, but close observation shows plainly a decided increase in the translucence of the negative when entirely fixed.

After thorough washing, the negative is laid face downward on a piece of glass, and a squeegee passed over its back to remove all the moisture possible. It is then turned face upward and laid on the glass or any other smooth surface to dry. If done in this way, it is said that it will dry perfectly flat.

When dry, the negative is passed through a bath of hot castor oil, the surplus oil being wiped off with a cloth, and, when dry, it is ready to print from.

A valuable advantage possessed by paper negatives is the ease and rapidity with which they can be retouched. Cloud effects can be readily produced—the light effects by the brush or stump, and the dark effects by partly rubbing away the paper backing of the film.

As showing how completely any effect of grain in the paper is overcome, a lantern slide made from a paper negative was shown. When thrown on the screen the result was as perfect in this respect as if a glass negative had been used. The slide was made by reduction in the usual way, by means of a north light acting directly through the negative.

Some lantern slides by Mr. Croughton, representing Louisiana scenery, were shown; also some by Mr. W. D. H. Wilson.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

ANNUAL REUNION AND DINNER.

THE outing of the Photographic Section of the American Institute was the most enjoyable of any which we remember attending for some years, though various disasters befell several gentlemen of the party, and plates were ruined by breaking of apparatus, the sticking of shutters, and the numerous incidents which always accompany the exposure of a large number of plates by a party, yet the work produced showed a decided advance.

With one exception, the gentlemen carried Stanley plates. One gentleman, in addition to Stanley's, carried some of Mr. Carbutt's most rapid plates. Owing to a variety of delays arising from changes about the hotel, the taking of the group, according to custom, was greatly delayed, and, when the cameras were in position, the light was decidedly failing.

Mr. Holmes, Mr. Partridge, Mr. Mason, Mr. Fisk and Mr. Roche all made exposures, and much merriment was created by one gentleman making an exposure before the slide was drawn. However, this was rectified, and, as far as we have heard, the number of successful negatives obtained of the group was larger than usual.

Whether it was owing to the musical festival in progress, with its accompaniment of guns, crackers and anvil choruses, we do not know, but the dinner was postponed until a late hour, and before the end of the speeches had been reached the hour was so late that an adjournment was called for, and a rush was made for the last trains and last boats. Those who were not heard from, however, promised to reduce what they proposed to say to writing, and we are, therefore, able to report not only much of what did take place, but also what would have been said had time permitted.

At the Dinner the Chairman, Mr. H. J. **Newton**, addressed the meeting as follows:

Friends and Members of the Photo Section of the American Institute—

We are again gathered to do the final exercises of our annual field day and excursion. During the year that has intervened since the last meeting under similar circumstances there was nothing of a very startling or extraordinary character occurred in the field of photography. The gelatine dry plate goes steadily on its victorious way, continually receiving new converts, who lay aside the old process of collodion and the nitrate bath for the surer and less complicated one of the dry plate. So easy has it become to make a negative, that large numbers are attracted to it, and amateurs are multiplying on every hand. There were some statistics published in one of our daily papers a short time since, which showed that there were in the United States six thousand amateur photographers and fifteen societies of amateurs with an aggregate membership of about four hundred. This should encourage those who are organizing such societies, as it shows plenty of material on which to draw. I look upon the amateur photographer as one under the influence of a pleasant contagion, which as a general thing runs its course and begins to subside in about two years. Of course the time, to a certain extent, depends upon whether the patient has it in a mild form. Sometimes, however, as in my case, it runs into a chronic form and becomes incurable. Such instances, however, are not common. Among the many who have come within the range of my observation in the last twenty years, I can recall but one or two instances of this kind. Our worthy general superintendent, Charles Wager Hull, had it in its severest form, and was considered by those who diagnosed his case as incurable. He succeeded, however, in finding some nostrum (whether patent or not I am uninformed) which produced a hallucination, or peculiar mental condition, which relieved him to a great extent of the most aggravating form of the complaint.

Ordinarily, individuals are not subject to a second attack of an inflammatory fever; there are, however, exceptions to the general rule. Sometimes a person will have the small-pox the second time, usually in a mild form. With this amateur fever this exception to the general rule seems to hold good, as I have observed occasional returns in a mild form and of short duration. Our good friend, the general superintendent, furnishes a conspicuous example of a return of the complaint; it did not assume an aggravated form, but it was caused by carelessness or indiscretion on his part. Shortly after the introduction of the gelatine plate he very rashly exposed himself, by getting a package and confining himself in a small dark room with them incautiously open. In a short time his friends noticed the unmistakable return of the premonitory symptoms. Fortunately, however, it developed only in a mild form—a kind of varioloid—and he has so far recovered as to be able to withstand the eloquent and persuasive efforts of the chairman of the committee to induce him to be present here to-day. I hope this will be a lesson to him, and that on all future occasions of this kind, self-defense, if not the fever, will impel his presence.

Mr. **Stetson** spoke of "*Photography as a Recreation*," and said:—

I believe in fun; but I am going to give you a serious speech on it. Amusement, recreation, recreation. It is worth study.

There are recreations which are neutral as to use. There are recreations useful. There are those harmful.

Photography is both. It is a recreation, capital. It is useful, greatly so. It is also harmful.

Every time we look at a bad picture, we lower the tone of our finest art criticism. Teaching beginners injures the taste of a musician. Bad music lowers. Preaching to the very low impoverishes the spirit of a priest. Association with the vulgar and profane diminishes the refinement and delicacy of a young lady or gentleman, or even an old lady or gentleman.

Amateur photographers and, to some extent, all photographers, make many desperately bad pictures. Every one lowers. It rubs the bloom off the peach.

At the dinner a year ago, I gave examples of the absence of artistic taste in some otherwise good specimens of photographs. Let us now go a step further, and find the remedy. My business is patents for inventors. Some say an invention is half made when the need of it is distinctly recognized. We find the need of artistic culture. We have recognized one cause, the degradation due to looking at fearfully distressing pictures. The remedy lies in a prolonged, continuous effort at the nurture of the finest and highest.

We do not lack for natural artistic taste. No man will love photography unless he is a poet at heart. But his eyes have got a squint. We do not lack for examples of high art. We much more need a yard-stick by which to measure how high art is. We need constant, earnest, systematic labor to conserve and, if possible, further develop our finer art instincts.

Study with another. Make associations with equals or superiors, and study wherein lies the real but delicate differences between the highest and the merely mediocre conceptions and executions.

What makes dignity, grace, beauty? If we cannot pose or shade to give character at will, it is a long way toward it to recognize qualities when attained or approached.

Study books. Edmund Burke's "Origin of Our Ideas of the Sublime and the Beautiful," John G. Macvicar's "Philosophy of the Beautiful," Clement and Hutton's "Artists of the Nineteenth Century." Visit, study, aid the art academies and institutions for art education which our age has developed. The book last named has a valuable outline of these in the introduction.

Buy books, and chew and swallow them, instead of lightly reading. The "Report of the Juries of the London Exhibition of 1851" will last a man a lifetime. John Ruskin's "Relation of Natural Science to Art" will last him another.

Mr. F. C. Beach spoke of "*The Burdens of the Amateur*" as follows.

Mr. Chairman and Gentlemen:—I did not contemplate making any remarks here to-night, but rather intended to be a listener only.

There was, however, one thought which struck me as particularly appropriate, in view of the fact that you professionals know so little about the troubles of us amateurs, so I have written a few brief statements on "The Burdens of the Amateur," which will be valuable for your general information, even if they fail to be interesting.

It has been fortunate for the amateur during the past year, that the stand taken by the society which I represent on the question of reform in dry plates has been inaugurated, for where we formerly had to contend with the stolid indifference of the manufacturer, on the ground that the quantity of plates consumed by the amateur was trifling as compared with the professional photographer, and that his complaints were of no account, we now find, in view I presume of the dullness of trade and keen competition, a general desire among the leading manufacturers to pay more attention to details, and to promise to furnish a plate of perfect glass, evenly cut, uniform thickness, and of a specially perfect emulsion.

The former method of doing business, which I fear prevailed to an alarming extent, generally known only to the dealers and manufacturers, whereby the latter's mistakes, when discovered by the professional photographer; were sometimes shoved off on the amateur, who, for instance, when complaining that a plate fogged, was told that his camera or his plate holder leaked light; or, when the plate was full of pin-holes, that he had failed to brush off the dust before or after exposure, is I hope happily past, and in the coming months we shall expect to see some real improvement.

More complaint has been made with the smaller sizes of plates than with others; first, because a large area of their sensitive surface was injured by defective packing, and spoiling the picture by the well-known mat marks; second, on account of their irregular shape and extraordinary thickness or thinness.

As was pointed out recently, at one of the meetings of our amateur society, by my friend Mr. Ripley, the irregular shape has sometimes been innocently made by the manufacturer on the supposition that when he took an 8 x 10 plate and quartered it into 4 x 5 plates each should measure accurately the required size, whereas it frequently happened that the 8 x 10 plate in the first place was not accurate in its own size, hence when the 4 x 5 plates were turned out, some of them were certain to be irregular.

Thus you can see how easily and unsuspectingly a large establishment, by a little carelessness, can injure its reputation, while, on the other hand, if more attention was paid to details, and less to the desire to see how many goods could be sold in short time, the standing of the manufacturer would be maintained, and confidence in his work retained.

And in this connection I wish to say, just here, that one of the principal burdens we amateurs have to bear at the present time is carelessness of manufacturers, or their failure to realize the needs of the amateur. It has, however, been, and it will be, our aim to convince them that they were cutting their own throats, as it were, in the hope that by-and-by they will confess that the amateur did know something after all. We insist that our money is just as useful and valuable to them as the professional photographer's, and when they undertake to furnish us with a package of plates warranted perfect in every respect, requiring the cash in advance, we should find the plates as represented, and not be compelled to fool away our time over their mistakes.

The amateur photographer does not like to be humbugged any more than the professional, and consequently when he feels that he has been, he naturally desires to make known the reasons. It is because many of us have been deceived that I have chosen to speak to you about it to-night.

I have reason to know that our good friends here are leaving no stone unturned to reform the defects spoken of, and they may rest assured that the one earnest hope of myself and of all amateurs is that this same sentiment will prevail throughout this country among all manufacturers. Let us speedily have reform in dry plates.

In response to the toast of "*Amateur Art.*"

Mr. W. E. PARTRIDGE said :—The amateur photographer is creating a school of art utterly his own. It recognizes no rule, is conducted by no theory, and its recent developments are marked by an audacity which is sublime.

The amateur photographer, like the Dutch artist, "takes" all things which he can see as available material for pictures. Nothing too high, nothing too large to escape from his camera. He seeks to place upon paper a reproduction of everything visible to the human eye in heaven above, or the earth beneath, and the waters under the earth. Does Venus cross the path of the sun? The amateur's instrument is ready for an exposure and a negative is made. Down in the bowels of the earth he seeks, with the electric light and hours of exposure, to make pictures of the most non-actinic subject known— a coal mine. Life and death are alike subjects for his pictures. I have seen, within a few days, a series of pictures which might well make an artist weep. A Southern friend finds a negro servant asleep on his piazza, and makes a photograph in which a pair of boots occupy nearly half a plate—the soles certainly twice as large as the remainder of the picture—running off in a long perspective of slender leg, and in the distance is seen the diminutive body curled up fast asleep.

Time fails, however, to tell of lines of picket fences, stretching straight across the middle of negatives; of exposures made just after some facetious looker-on has said "open your mouths;" of really brilliant, beautiful pictures made looking directly at the sun; and the thousand other things which are daily being put into almost imperishable form by amateurs.

The artist looks on, shocked to a degree which is hardly conceivable, but nevertheless a glimmer of usefulness is seen in all this. Now, everywhere, the amateurs are seizing upon phases of life, upon expression of countenances, upon poses or positions which are revelations to the artist. The little street urchin caught the other day, in the act of saying "What are yer givin us?" would be of incalculable value to J. G. Brown or other genre painters.

Phases of nature which pass away too quickly even for the most rapid sketch, and which the artist could only hope to find once in a lifetime, are here seized and placed upon record where they are capable of indefinite multiplication. The result will be immense strides in both landscape and figure painting. Though to some extent this has been foreseen, the most sanguine could never have dreamed of the advance which has been made since our last meeting here at the seaside. Any one of the pictures which Mr. Roche has taken to-day represents studies of character, posing and grouping, which any artist with his pencil is incapable of securing in a month of continuous sketching.

I may conclude then by suggesting as a sentiment, "The amateur, the best friend of both the artist and the professional photographer."

REGULAR MEETING.

NEW YORK, September 1, 1885.

PRESIDENT NEWTON in the chair.

The *President* announced that since the last meeting the section had lost a friend in the death of Mr. Loutrel, President of the American Institute. The Executive Committee were instructed to prepare suitable resolutions to be presented at the next meeting of the section.

At the next meeting, Mr. A. Bogardus will give a talk on some appropriate subject.

Mr. NEWTON—The latest thing that has happened to the Photographic Section of any importance, was their annual field day, excursion and dinner at Coney Island, a week ago to day. There were quite a number there with cameras who made exposures of surf views, and perhaps this might be the best time to dispose of these things before Mr. Taylor favors us with his lantern exhibition. I made eight exposures on plates at the beach and I have proofs of these eight which I will pass round. Mr. Mason exposed several negatives of the group, and he will tell you what success he had.

Mr. MASON—I have here two prints from each plate. I exposed five plates. The second plate which I exposed was fogged before packing in the box, as it was treated exactly like the other plates, and there was no reason for its fogging. I have numbered them respectively, 1, 2, 3, 4. On No. 4 I gave an exposure of one second, half a second on No. 2, and two seconds. On two plates I found that the figures are moved, and I attempted to remedy that by giving them to a finisher, who charged $3 for his work, and I cannot see any difference.

On the occasion of Gen. Grant's funeral, I was requested to make some pictures from the reservoir at 42d street. I exposed 11 x 14 plates and used a 12-inch focus lens, which I have shown here. I have prints with me made from these plates. They were all made on the shadow side.

Dr. ELLIOTT—I have some pictures made by Mr. Roche last Tuesday, using the Prosch shutter on the Stanley plates, I think you will find them interesting.

Mr. MASON—I have received the numbers of ANTHONY'S BULLETIN issued since our last meeting, *Photographic Eye* from Chicago, *Photographic Times*, and two numbers of the *Journal of the Photographic Society of Great Britain*, and a communication from the Photographic Society of Great Britain announcing their exhibition, which is to open on the 3d of October, and inviting the members of this section to take part.

The usual vote of thanks was given for the periodicals, after which the lights were turned down and Mr. J. TRAILL TAYLOR gave a lantern exhibition, entitled "Half-hour Ramble Among the Orange Groves of Florida." Taking his audience in imagination to England, Mr. Taylor gave a most delightful description of a trip across the Atlantic in one of the large steamers. Passing down the Atlantic coast of America he stopped at various interesting places, and finally rambled through the Orange Groves. The pictures shown were from a number of sources, and many were Mr. Taylor's own work. The whole exhibition was very interesting, and given in Mr. Taylor's happiest manner.

Mr. Beach, who had intended to exhibit, was unable to do so, as the gas for the lantern was exhausted.

Mr. BEACH then explained the working of the lantern which had been used.

President NEWTON—Mr. Cooper, I understand you have something to show and explain.

Mr. COOPER—I have something here which you have nearly all heard of. I refer to the Eastman Roller Holder. That this is a matter of photographic progress I think will be admitted by all.

This apparatus, the Eastman Roller Holder is an American invention. I have had persons remark to me that a roller holder was not at all new. There have been roller holders before, but so far as their efficiency was concerned there are no results.

I have the pleasure of placing before you two of the most perfect roller holders that exist—the one Mr. Eastman's, the other Mr. Warnerke's.

Mr. Cooper then explained the workings of both holders, showing the difference between the two. He announced that he would be glad to answer any questions in regard to it, and practically demonstrate the working of it.

Votes of thanks were given to Mr. Taylor for his interesting exhibition, to Mr. Beach for his kindness in using his lantern, and to Mr. Cooper for his interesting explanation of the roller holder.

Mr. MASON—I wish to say a word in regard to the development of gelatine plates, brought out by some recent experience of my own. I believe we have all been using developers very much too strong. We have used too much pyro, producing harshness, and too much soda, producing softness.

Of the negatives made at the Island, with No. 1 I used six ounces of water, six grains of pyro, one grain to the ounce. I used the Standard developer, using one-half the quantity on No. 1, and in No. 2 doubling the quantity of soda, and I found the plates had been over-timed. Using more pyro I found that the plates had been over-exposed. The second time I used only a little pyro and more soda, and you see the result. One negative took 20 minutes to develop, another 17, and others less.

You may think it is very slow, but it is not necessary to stand and rock the dish all the time. Set it down and go away, and when you think it is done, come back and look at it.

Mr. NEWTON—My experience in developing dry plates, whether gelatine or otherwise, led me to the conclusion that, as a rule, altogether too much pyro was used in developing the negatives.

In developing the plates I exposed last Wednesday, I used a very small quantity of pyro, and took a little more time, to avoid harshness in the high lights of the surf, and had it been convenient I would have brought the negatives along to show the difference between them and a negative developed with too much pyro.

Mr. BEACH exposed two Stanley plates four minutes and developed them with a developer containing the ordinary amount of pyro, four ounces, and three or four drops of the alkaline solution, instead of a dram to the ounce as is usual. The development went right along. The exposure was of such a character that weak alkaline solution had to be used. With about one minim to the ounce of alkali he produced two as beautiful negatives as ever was seen, so that with the gelatine plate you have a latitude that is almost inconceivable.

You can expose a plate one second and you can expose it sixty seconds, and you cannot tell which is the one exposed one second and which exposed a minute, so that the development must be regulated by the exposure. If Mr. Mason had an under-exposed plate his process would not have succeeded.

Mr. COOPER—I am afraid that some of the negatives I have here would call for a diverse opinion to that expressed. I believe you can't get a hard negative by using a small proportion of pyro.

I have a lot of negatives representing different subjects, all made on the same day, all developed in the same developer, and I used ten grains of pyro. Some are extremely soft, while others show various degrees of strength, in some amounting to absolute opacity in the lights.

My object in developing these negatives in this way was to demonstrate the possibility of acquiring any degree of density or softness with a uniform strength of pyro.

Mr. NEWTON—I think it would have been better if you had used less pyro in the development of these and taken more time.

Meeting adjourned.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

EXPERIENCE MEETING.—*Continued.*

Mr. NEWTON—Speaking of a country campaign where there is no water; now, in the city I have sometimes found too much water. One time this summer I went out on to a dock 600 feet long on the North River, where the water was forty feet, and accidentally my camera, tripod and lens fell overboard. I immediately observed that the water was in too great abundance, and set to work to fish out my apparatus, which I succeeded in securing.

I don't know that I have any experience that would be instructive at all. I don't propose to give any experience with a moral to it, or a fable and tell what it means. I have had some experience in my day and generation, and a little pleasant experience this summer.

On the 30th of May—Decoration Day—I went down to the pier at the foot of Twenty-sixth street, by invitation of the captain of the steamer, to make a picture of the steamer when they had got a portion of the Grand Army on board to go up the river. He told me that they would be ready about 12 o'clock. I was up there and was ready, but they did not come until nearly 2 o'clock, and between 12 and 2 it clouded up and got very dark, and before the vessel left it had commenced to rain. The wind blew from the north and my camera was pointed that way. That was one of the things that I was not prepared for, a contingency of that kind. My dark slides were in my focusing cloth; I did not dare lay down my ground glass where there would be danger of spoiling it, for I thought a good deal of it. Before they got ready, a sailing vessel came down the river. I had a Prosch shutter, and inside of it was velvet lined, and my lens had got wet and, of course, the velvet refused to slide over the wet surface. That fixed the plate with a circle on it. Then I had a nice job to take my lens off and fix the shutter and get things in working order, but I had to keep my hand over it to keep it dry because the wind was blowing that way, and my sensitive plate lay six feet away in the focusing cloth. I was bound to spoil a plate when the boat went, if it rained pitchforks. Five minutes before 2 the boat started out; then I exposed the plate on the boat. If you recollect that day, you will recollect what kind of a day it was. I had no idea of getting a good negative. I took it up to Bellevue Hospital and developed it, and to my astonishment it came out fully exposed. I secured a beautiful negative, and I have brought a print to show you.

In explaining the picture, Mr. Newton stated that under these very unfavorable circumstances the flag on the boat came out sharp and clear to the end.

Mr. Ripley—One of my most vivid experiences during the recent hot weather has been in making emulsion, but my feelings on that subject being too deep for utterance, I will not further refer to it.

I had the pleasure of being in company with Mr. Beach, in his trip to Buffalo and Niagara, and the experience gained at that time only served to confirm my previously formed opinions as to how much there is in the management of the developer.

Each separate part of the developer has its own special function. We are very apt to regard the combination as the thing. It is the thing, but we must learn to suit the combination to the particular circumstances that may be presented to us. If we do that and bear in mind what the special function of each part is, we shall come nearer than if we mix the developer, as we so often do, by a hard and fast rule of so much of No. 1 and so much of No. 2 and so much water for any and all subjects. For instance, take the pyro developer; what does each part do? I take it that the pyro is the developer, the alkali is the motive power. Bromide of potassium, or ammonium, we use to restrain the action of developer and, in combination with pyro,, to gain density and contrast.

So, if we bear in mind the conditions of exposure, and regulate the separate parts of our developer to suit the conditions, we can, without much difficulty, get something that approaches a good negative. I have also found pyro itself, without any bromide, to be a powerful restrainer. I have used as an experiment 20 or 30 grains to the ounce of developer and obtained a fine negative. In developing negatives of subjects with strong contrasts, such as some interiors or landscapes, commence development with half the amount of pyro that is intended to be used, which will bring out the details in great softness; then add the balance of the pyro in combination with some bromide to finish to proper density.

It is a great mistake to use the developer too strong or to carry development too far. We want to get out the detail without fog. Sometimes in case of very short exposures we are tempted to force our plates. We do not gain anything after all, for there will be fog over the whole surface, which ruins all, while a thin negative, if clear, can be intensified, and from it we will obtain good prints, which is the result we wish for.

Dr. Wilcox—There are some things we prize for the trouble we experience in obtaining them, and there are others that we prize for their intrinsic value. I think that while Mr. Newton is to be congratulated upon the excellent result obtained under difficulties, he ought not only to prize the picture for the trouble he had in getting it, but also for its intrinsic value.

It occurred to me last summer, when I had considerable difficulty to find a place in which to develop plates, that a short article on the advisability of dark rooms in summer hotels would be a good thing. A great many summer hotels advertise tennis courts and other opportunities for amusement, and it seems to me that they could profitably advertise dark rooms, especially as the number of amateurs is increasing rapidly.

I have never found a place yet but that by the exercise of some ingenuity I could safely wash and develop plates. Once I took possession of an ice-box that had become too small for the use of the hotel, and my washing apparatus consisted of an old cheese tank, the plates being placed around upon the bottom.

The difficulty of avoiding light from the transom has been illustrated. I have found that a cellar is usually a safe place. You will there at night get an absence of light, and especially in the country.

In regard to the trouble we have had from so-called mat marking and inequalities in glass, in the last plates that I have used I have found a great improvement. It seems a very little thing to avoid these inequalities in glass, but plate makers assure me that it is by no means so, especially in the smaller sized plates. Several that I have seen lately on the subject have said that they will leave no stone unturned to discover the causes of deterioration, and I am sure they will do all that can be done. Most of them I am certain feel that the society has been doing good work in exposing the defects in the plates, and hope that by our investigations the causes may be made out as well as the remedies to be employed.

Mr. Partridge—Perhaps Mr. Ripley will

give us a little light on the difference in packing and cutting and general regularity of all the larger sizes as compared with the 3¼ x 4¼. If our members will call to mind the sizes of which complaints have been made, they will find that it has generally been the smaller sizes, which seem to be cut up from the odds and ends of larger glass. I know that the change to 5 x 8 generally makes a great difference in the number of plates that I can use in a given batch, and that while I find the smaller plates atrocious, I will only find one or two in the same brand of plate too large or too irregular to go into the holder of the larger size. I think in the last four dozen plates I have found two 5 x 8, one too large and one too irregular for my holders, in a single dozen.

Mr. BOWMAN—In justice to plate makers I will say that I have used a good many plates, and in 12 dozen 5 x 8 that I have used in the last three weeks there was only one that would not go into the holder.

Mr. RIPLEY—As I understand Mr. Partridge's question, "Why is it that this variation in size in plates shows more in the small size than in the large ones?" It is perhaps owing to the cutting system in use by some makers. Plates are mostly all coated in large sizes and cut up into small sizes afterward. If a large size plate is used and is ⅛ or $\frac{3}{16}$ of an inch too large one way, the system of cutting I refer to cuts the plate exactly in half, and the small plate is out of the way exactly half that difference. Now, the makers of our plate holders give a certain lee-way for the size of the plates. They give it no more lee-way for an 8 x 10 than for a small one, and the consequence is that the small plate holders have less lee-way, and small plates have more variation in proportion to their size than large plates. By the system I have employed, every plate runs through a gauge, and any that do not toe the mark are rejected, and while it requires extra labor I think the end justifies the means.

Mr. NEWTON—At a previous meeting I undertook to give some information about mixing emulsions, as it was solicited from me by a manufacturer of dry plates who had trouble in mixing his emulsions in hot weather, and, from my varied experience in mixing emulsions, I supposed I knew what I was talking about; but in reading the report on the journal of what I was supposed to have said, I concluded that I didn't know anything about it, and I was sure no one else would if they took the report as an authority. There should be some system adopted which would make any contingency impossible where a member could be placed in a ridiculous position, especially where a person is supposed to be an authority on what he talks about. I knew what I was talking about; but I defy anybody, whether they knew or not, to tell anything, or to guess what I was driving at, by reading that article. I have been indignant, because it was going to be read by thousands of people who knew as much about it as I do.

Dr. WILCOX—In the matter of having a correct report of the proceedings of the society, it has been a source of annoyance to find ourselves misreported, and it is not only so to one who speaks, but also to those who rely upon the reports for an understanding of what has been said. In the case of some of Mr. Newton's reports, even having been present at the meetings, I failed to recognize what was said. I wish to call the attention of members to this point, in order that when this matter comes up at a regular meeting the society may act upon it. It would be well when the first proof or type-writer copy is struck off to cut it up in bits and send it to the members who have spoken, and thus give them an opportunity to see their own remarks and correct them. It being understood that opportunity shall not be taken for an extensive re-writing nor for corrections that will delay the appearance of the proceedings; but as ours have appeared at somewhat long intervals, I do not think that would be an objection.

Mr. RIPLEY—I do not think it necessary to take any action on that matter at all. We have a committee to edit our reports, and they are supposed to have that matter in charge. This is an informal meeting and their attention is called to a grossly misrepresented set of remarks, and this being the case it is not likely that it will occur again.

Mr. NEWTON—I would suggest that this is not the first time that I have been made to appear ridiculous by them here. I have heard several times before that the reporters that report these meetings, or what is said at them, are not familiar with the terms used here. If they report in the courts they will report correctly, because they know all the terms, but when they come here and they hear terms they are not accustomed to, there is not a stenographer who can do it the first time. Now, with reference to the editor, I requested that I should be allowed the privilege of seeing the report and seeing that it was corrected. I was promised that it should be done, and it was not, therefore it might happen half a dozen times.

Mr. PARTRIDGE—I am very glad that this subject has come up here, as this discussion will go before all the members. I have had long experience in dictating to stenographers, and I want to say something which may be of value to the members. In the first place, a stenographic report, which is almost exactly *verbatim*, can be, as Mr. Newton has said, rendered almost absolute nonsense by the omission of a single word. The moral of that is, for us, as we have a very noisy room, to speak with a little more deliberation than usual, and to make sure that every word is distinct, so that every word can reach the stenographer's ears. I know, myself, at times I have failed to catch a word, and so failing have missed the keynote to a remark. We can help ourselves very much if we remember the bad qualities of our room and its noise. The suggestion of submitting the parts of the reports to the speakers is one that can be easily acted upon by means of a manifold copy, and I do not think we need have a recurrence of our former trouble.

The CHAIRMAN—You are perfectly right in demanding the privilege of seeing the report. Our room is a large one; many of us speak rapidly, and in many different tones ; few of us are familiar with dictating to a stenographer, but the stenographer must do the best he or she can, and a proof that can be corrected can be sent to each speaker and can be corrected and published in a correct way; and it seems to me that merely calling the attention of the committee having these reports in charge to the matter, that no further discussion is necessary.

(To be continued.)

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I THINK the excellence of your journal should be sufficient to induce many who have not taken it before to subscribe for it without any offer of a premium. I have taken two photo journals for several years, and thought they were cheap enough at the price I paid ; but for practical use and its extreme cheapness, when we take into consideration that you give us two a month, your BULLETIN "beats the world." May it, and you, live long and prosper.

Respectfully yours,
JOHN C. PATRICK.

N. Y. AUG. 25, 1885.

Editor BULLETIN :

I LIKE the BULLETIN more and more every number, and hardly see how you can give so much for the money.

Yours respectfully, JOHN C. PATRICK.

What Our Friends Would Like to Know.

N.B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—C. A. R. G. writes:—In using Scovill's prepared soda developer according to directions—*i. e.*, 1 dram of No. 1. to 1 oz of No. 2. my plate remained two minutes without showing any picture. I then increased the quantity of No. 2, and in one more minute the plate began to develop, and produced a *thin* negative in about 20 minutes. (I develop until negative is *black* all over. When it first begins to turn dark, the picture can be seen by looking *through* it, but it never appears *on the back*. When I take it from the developing dish it is opaque and no picture visible through it.) Is all this as it should be? Please help me.

How can I learn the art of *retouching?* I am willing to pay for it. Will any of your *books* teach me?

Is the toning formula sent with the Ex. Bril. Paper *the best* for me to use?

A.—We do not know how the above soda developer is made and therefore cannot help you in this matter. Another thing, you do not state what plates you used the developer on ; this is a very important item of knowledge when you ask of the action of the developer. Some plates always give thin negatives in our hands with any developer, the manufacturers appearing to try how little emulsion they can spread over the largest amount of glass surface. In regard to retouching, our publishers have a very good book on this subject, which will help you if you have artistic tastes. If you have no tastes in this direction, it is better to take lessons from a practical retoucher. To the last question we answer, yes.

Q.—C. H. writes:—Can you answer through the BULLETIN how to prepare the cloth of a tent so that it will not leak?

A.—Give the cloth a coat of hot solution of glue and allow to dry ; then wash over with strong alum solution to make the glue insoluble. Should this treatment fail, it will be ready to receive a coat of boiled linseed oil, which must be allowed to dry thoroughly before folding.

Q.—W. H. B. writes:—I have a negative that is too intense, how shall I reduce it?

A.—Treat with a weak solution of bromide of copper until bleached; wash thoroughly, and place in a ten per cent. hypo solution until the white image becomes thinner; then wash again thoroughly and redevelop. Remember the hypo will remove the image entirely if left too long.

Q.—"Buckeye" incloses tintype with semicircular spots on it, and writes:—Will you kindly explain in the next issue of the BULLETIN the cause and remedy for these spots. Have been bothered a great deal by that peculiar style of markings, both on wet plate negatives for copies and on tintypes.

A.—We could judge better of the difficulty if the plate had not been varnished. It seems to us that the collodion requires aging by the addition of iodine. Add iodine to the collodion until it is a sherry color and try again.

Q.—W. J. G. writes:—I have a ferrotype with a scenic background. I want to make 8 x 10 bust and get rid of background, and yet have a plain middle tint ground. Have tried blocking out on negative and tinting by masking, but have failed What is the best way to do it?

Also, I have two 14 x 17 gelatino-bromide enlargements, nearly two years old, the whites of which have become darkened, although bleached quite clear when first made. Can they be restored and the action be prevented?

How can we keep our gold saucers fresh, so they will spread well from the brush?

A.—You must take a good negative of your picture, and send it to a retouching artist of first-class standing. Blocking out of this character is highly artistic work, and is a specialty requiring great skill. In regard to the 14 x 17 enlargements, they have undoubtedly been imperfectly washed from the hypo. Nothing will restore them. To prevent this occurring again, take great care that the pictures are *thoroughly fixed* and then *thoroughly washed.* In regard to the last question, perhaps some of our daguerreotype friends can help you.

Q.—C. A. R. G. writes:—Please answer through the columns of your BULLETIN these questions:—

1. In how *short* a time may a negative be developed and make a good printing negative?

2. How *long* may a negative be in developing bath and make a good negative?

3. How may I know when a plate is developed sufficiently, and what is the effect of keeping a plate in the developing solution too long?

4. When you say "the image should appear on back of plate," do you mean that it should be visible by reflected light, or be seen by looking *through* the plate?

These questions refer to both ferrous oxalate and Cooper's developer. All my negatives lack clearness and sharpness of detail. What is the cause?

Most of them have a number of small, clear specks, which cause black spots in the print. What is the cause and the remedy?

Sometimes the picture begins to sink into the film without any details having appeared. I would like to know the cause and remedy.

How long shall I allow prints to remain in fixing bath after toning?

What is the effect of over-toning?

By giving *plain* and *definite* answers to the above you will confer a great favor.

A.—1. This depends upon the plate used, the time of exposure and the strength of the developer. 2. Depends upon the same conditions as No. 1. 3. Also depends upon the plate used; too long development gives great density and fog. 4. By reflected light. Lack of clearness may come from bad focusing, leaks in camera box, or over-exposure and over-development, presuming your plates are good. Clear spots are from faults in the emulsion. Sinking of pictures rapidly into the film is from over-exposure. Let the prints remain in hypo (1 to 8) about twenty minutes after toning. Over-toning gives blue-gray and flat pictures.

Views Caught with the Drop Shutter.

SMITH & PATTISON, of Chicago, who lost everything by fire some time ago, have settled their insurance. The adjustment was made by arbitration, and the settlement was for $20,000.

MOFFITT, of New Britain, Conn., some time ago lost his gallery by fire. He has recently fitted up a new one in first-class order at 173

Main street in the above city. Special care has been taken in the construction of his operating room, which has a sky-light 19 x 22 feet, with each light of glass 30 x 60 inches. Seavey's back-grounds, and cameras for every class of work, serve to furnish Mr. Moffitt with facilities for fine work. We wish him every success.

The many friends of Mr. Albert M. McKenney, of Albert M. McKenney & Co., photographers, Market Square, Portland, Me., will hear with regret of his decease, which occurred Sept. 8th, at Manchester, where he had been staying. He was one of the oldest photographers in Portland, and was 66 years of age at the time of his death. He was a member of Ancient Brothers Lodge, I. O. O. F., and leaves a widow.

Mr. John Read, of Patterson, N. J., has shown us some fine views of Niagara Falls, taken on his recent trip to the convention. He used the Stanley plate and Dallmeyer R. R. lens. He has also obtained several good negatives of the Erie, New York, Chicago and St. Louis express in rapid motion.

We have to thank the committee of arrangements of Eastman College for their kind invitation to the celebration of the twenty-sixth anniversary, September 25th.

E. Suter, of Basle, has been awarded a silver medal for invention and construction of lenses at the Inventions Exhibition in London.

We regret to note the death of Walter Bentley Woodbury, to whom photo-mechanical printing owes so much. He was found dead in bed on the morning of Saturday, September 5th. Particulars in our next issue.

We hear with regret that Mr. J. Traill Taylor has resigned his position as Editor of the *Photographic Times*, and leaves for England early next month. We are sorry that the *Times* has lost such an able and highly esteemed gentleman.

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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

ANTHONY'S

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*
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THE FUTURE PHOTOGRAPH.

WE note from time to time the appearance in the journals, both American and Foreign, of examples of "Isochromatic" or "Orthochromatic" photographs. Both terms are used to convey the same idea; but, unfortunately, the first is somewhat misleading, although very much used on this side of the Atlantic. Perhaps a short description of the idea these words are used to indicate may show what we mean when we call "Isochromatic" misleading.

Every photographer knows that of all the colors of the visible part of the spectrum, violet is the most actinic, or it effects the greatest changes in the sensitive film upon the photographic plate.

Now this violet light is the sensation produced upon the eye by pulsations or waves that are exceedingly rapid, and which vibrate 758,840,000,000,000 times in a second. The number of these vibrations per second gradually diminishes as we pass from violet through the various other colors until we reach red, when the waves follow one another at the rate of only 434,420,000,000,000 per second. These figures seem almost incomprehensible to the human mind, yet they have been carefully and repeatedly verified and found correct. As the rapidity of these vibrations grows less, their effect upon the photographic plate also diminishes, and when we come to the vibrations that give rise to the sensation of yellow light, they have little or no actinic power, and red light is the most non-actinic that we know. It results from these facts, that objects colored yellow or red do not produce the proper equivalents, in light and shade upon the photographic plate, of these colors reflected by the objects illuminated. Red in an object comes out black in the positive, and without any gradations of intensity of color, and entire lack of detail; the same is also true of yellow. On the other hand, violet and blue are so actinic that these parts of a picture give overexposure in the negative, and the positive comes out too light.

To overcome this want of uniformity of actinic power in the colors, various materials have been added to the photographic film to accelerate the action of the less actinic, and screens of various colors have been interposed between the film and the object to be photographed to retard the action of the more actinic rays. This way of proceeding has been called "Isochromatic" or "Orthochromatic" Photography. The former word really means "same color," while the idea of the proceeding is to produce not pictures of the same color, but rather in their true relation of color. Hence the word "Isochromatic" is misleading, while "Orthochromatic" should be used, since it means "correct color," which is the aim of all these processes.

Without going into the question of who first had the idea of making all the colors register their true gradation of light and shade upon the photographic plate, it certainly remains clear that Mr. Fred. E. Ives, of Philadelphia, was the first to realize and practically carry out a process to effect the object in view. His method of doing this has already been described in the pages of the Bulletin, and we will not repeat it here.

We have before us several examples of orthochromatic photography produced in Europe, and also some kindly sent to us by Mr. Ives at our request. From an examination of all these, we are satisfied that, until we can photograph in natural colors, these are the true, the coming photographs.

As will be seen by referring to Mr. Ives' original papers in the Bulletin, he makes the photographic plate sensitive to red and yellow light by adding chlorophyl, the green coloring matter of blue myrtle leaves, to the film. In Europe, on the other hand, Dr. Vogel uses a material which he calls azaline; while Schuman, Eder and others use eosin, cyanin and other dye-stuffs. In all these cases—Ives' as well as the others—a screen of yellow color interposed between the object and the sensitive plate is used to moderate the action of the blue and violet rays. And Ives' plates must be developed in subdued deep orange-green light.

In Europe there are several firms making orthochromatic plates. Löwy & Plener, of Vienna, are making them under the direction of Dr. Eder, and we have before us an illustration of the results obtained. The subject is an oil painting of the Madonna. The drapery and head-dress in the original picture were dark blue, while the background was yellowish, shading to dark brown below. In the ordinary photograph we have the background and the figure blurred, the dark blue of the head-dress and the yellow of the background behind it being very badly defined, while the whole picture is flat, the background and figure together. In the orthochromatic photograph, on the contrary, the whole picture is exceedingly life-like, the shading wonderfully harmonious, and the figure stands out in fine relief.

In another set of pictures, we have illustrations of the work of plates made by Angerer & Szekely, of Vienna. In these a chromo-lithograph was taken as a subject. In the original picture we have a young girl in a blue dress, with brown hair, long terra-cotta gloves, and a bunch of reddish flowers in the neck. The background is bluish above, shading to green and brown foliage below. In the ordinary photograph of this picture, the hair, the flowers, the gloves and the lower part of the background come out in harsh black patches entirely wanting in detail, while in the orthochromatic photograph every gradation of light and shade is well preserved, and the whole picture is harmonious and pleasing to the eye.

In a new book recently published in Germany, we have some examples of the work done with Dr. Vogel's azaline plates. In this case a golden-shaded and purple fan, with a blue vase, have been taken as examples to show the results obtained with the plates. The picture produced by ordinary photography had the same characteristics as those mentioned above, while the orthochromatic photograph gives the colors in the correct relations.

In all the processes, the examples of which we have noted above, we do not find the fine gradations of shade in all the colors which is to be noted in the examples that we have of the Ives' chlorophyl process. In a picture of an autumn landscape that we have before us, the contrast between the two photographs of it—the ordinary and the orthochromatic—is really wonderful. In the ordinary photograph the richly colored foliage is one uniform mass of blackness, while in the orthochromatic photograph the lights and shades are beautifully preserved. In another example we have two photographs of a bank note, in which at first sight it would appear that two different notes have been photographed; while, on the contrary, the difference is caused by the inability of the ordinary photograph to reproduce the yellow and blue parts of the note in their correct value, and the faithful reproduction of these by the Ives' process.

From what we have said, it is evident that this system of photography is the correct one, and will consequently be developed in the future. There is only one drawback to any of these methods at the present time, and that is the slow action of the plates. These films require a great many times the amount of exposure that we give to ordinary slow gelatine plates. But that this is only a temporary difficulty there can be no doubt, and we may any day hear of the production of orthochromatic photographs on plates that approach the rapidity of modern gelatine ones. As these plates are sensitive to light of all colors, they will have to be developed in a manner different from that now pursued.

Since such plates give us pictures in the true relation of light and shade in colored objects, why should they not ultimately come into general use? To reproduce the fine gradations of light and shade in the pictures of Turner has tasked the skill of our finest engravers; while a photograph of our beautiful autumn landscapes is false in everything but the outlines. Orthochromatic photography will give us the means of overcoming these difficulties, and this is the method that will be used to produce the future photograph.

EDITORIAL NOTES.

We have before us an excellent example of a ferrotype dry plate. We have seen quite a number of efforts in this direction, but the one before us is the only *success* we have seen. The result shown is good in every respect, and we understand the plates will soon be put upon the market.

The photographers of Hartford and Springfield had a decidedly enjoyable time on September 25th, in the shape of a base ball match at Ward Street Grounds, Hartford. Mr. W. R. Leache, from the house of our publishers, was there, and to him we are indebted for the account of the proceedings. About 500 photographers, professional and amateur, were present, all the studios in both cities being closed for the occasion. After the game was over, the score stood 20 to 12 in favor of Hartford. We hear that the return game at Springfield has since come off, but have not yet received the returns. The ladies graced the ball grounds by their presence to the number of about seventy-five. Among those present were Mrs. De Lamater and Mrs. Olsen. In the evening about fifty sat down to a dinner at Merrill's, given by the Hartford photographers to their visitors from Springfield. Many witty speeches were made by artists from both cities, and nothing was left undone by the Hartford photographers to render their visitors happy and make their time interesting. Frank A. Bowman, of New Haven; Moffitt, of New Britain; and W. R. Leache, of New York, were the only outsiders present. The whole affair was due to the energy and social good feeling of Messrs. Andrews, De Lamater, George Stuart, and Crane of Rogers' studio; and these gentlemen deserve great praise for the success of the interesting reunion.

THE Amateur Photographic Society of this city may find cause for congratulation in the fact that their president is so often quoted by the English photographic journals.

His developer, known there as the "Beach" developer, seems to have given much satisfaction, and also to have drawn upon him the criticisms of champions of the ammonia developer. It may not be a remarkable honor to be mentioned by British periodicals, but then "its English, you know."

SPEAKING of English journals, reminds us that they are all urging their readers to pay special attention to "life pictures." That is, pictures of active, moving life—of life unconscious of the fact that it is being photographed.

Those who cannot afford or do not care to invest in a detective camera, can manage to catch many a view "on the sly" if they will leave their tripod at home, and, with camera tucked under the arm, take a shot at many things that they would lose if they stopped to set up a tripod. Of course there will be many failures, but the successes will more than pay for the trouble.

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

HOW TO SUCCEED IN TAKING GOOD PICTURES ON GELATINE PLATES.—No. II.

BY S. R. BOTTONE.

WE mentioned in our last, that if the window of the dark room looked to the sun it would be better to block it out altogether and work by a dark lantern only. It is therefore as well that the kind of lantern fit for this work should be described. The ordinary "ruby lantern" sold by the photographic dealers is perfectly trustworthy, but it generally is so dark as to try the eyes very much.

A lamp that serves our purpose well can be made from a hock bottle. Most of the hock bottles are of a beautiful ruddy orange tint, which is peculiarly non-actinic. If one of these be chosen, and marked deeply round the bottom with a good triangular file (such as are used for setting saws), the bottom will come off clean if the bottle be plunged just up to the mark in boiling water. If the edge be at all uneven, it can be ground smooth on a stone with a little sand and water. An empty Swiss milk tin, with perforations in the bottom to admit air, is placed on the table, bottom upwards; on this is placed a child's night-light, and over all the hock bottle. At one foot from the plate this will be found a safe and pleasant light to work by. The student will do well, however, to test even this light, by exposing a plate for a quarter of an hour to its influence at one foot distance, and then developing, as all bottles are not equally non-actinic. Supposing we have satisfied ourselves that our dark room is really trustworthy, we may proceed to the next step, viz., exposure.

Improper Exposure.—More pictures are spoiled and more tempers soured through improper exposures than through all the other causes of failure put together. Many amateurs, having read something about the wonderful sensitiveness of emulsion, give the most extraordinarily short exposures, by the aid of marvelous rapidly closing shutters, with the result of getting here and there a few hard black outlines, all detail being lost in clear glass. Some, again, go to the other extreme, and, in circumstances under which a moderate exposure would suffice, give such prolonged ones that the image, although full of detail, is entirely lacking in density.

The student must remember that the light is continually varying. The best time of the year in England, at which exposures are shortest, is in April and May, when blue skies and light flecky clouds prevail. Then comes June and July, good, but not so good as the two former ; then August, September, February and March are about equal. October, November, December and January are the worst months. Then, again, the time of day has much to do with the quality of the light. Even in the best months, the very early morning and the late afternoon rays of the sun are far behind the midday rays in power, owing to the yellow and ruddy tints which prevail at the sunrise and sunset hours. Again, the focal length of the lens, with a given aperture, causes the exposure to vary; and with the same lens, a smaller stop necessitates a longer exposure.

Hence it is easily seen that while some of these factors of the length of exposure can be reduced to hard-and-fast rules (such as focal length and aperture of lens), others can only be learned by experience. In the following outline of the mode of gaining this experience, we will suppose the student to be working with a portrait lens, quarter-plate size, the aperture of which, when not stopped down, is about $\frac{2}{5}$ of the focal length. Now, such a lens could not be used for portraiture without a stop in a glass-house or out of doors, unless under very exceptional circumstances, as the exposures required would be too short to be given by hand. In an ordinary room the case would be different, as the light is much less.

The student should, therefore, fit up an extemporary studio looking due north, and open to the north, with any opaque dark background at the south end. It is essential that the background be quite opaque, if the studio is an open-air arrangement, or else the sun may shine through certain parts of fabric, producing all kinds of disagreeable effects.

In making the following experiments, let the student procure a small plaster figure, and place it on a table or other stand, to be used as his subject. It is a great mistake to begin experimenting on bodies that can move, as any motion renders the results indistinct. The camera, having been placed at a convenient distance from the object, must be clamped down rigidly to its stand, so as to be absolutely immovable. This is essential to success in the experiments we are about to perform.

We now take a dark frame, or "back," and measure how much the sliding shutter moves up. We paste or gum down a strip of paper (stamp-strip will do very well) of this length along the front of the slide, and we divide this strip with pencil marks into ten equal parts. In the dark room we place a sensitive plate in our "back," having previously placed a half-inch stop on our lens, and carefully focused our object, the statuette, etc. Removing the ground glass, replacing the cap on the lens, and inserting the dark frame, are the next operations. We then draw up the shutter to the 1st division, and taking our watch in our hand, remove the cap from the lens, and expose while we count one second. Replacing the cap, we carefully pull up the shutter till we reach the 2d division on the shutter, taking the greatest care not to derange the camera in any way. We then give another second's exposure, and again close the lens. In precisely similar manner, using the same precautions not to disturb the camera during the drawing up the shutter, we expose, one after the other, the whole ten divisions of the plate in the frame. The effect of this mode of procedure is, that on this same plate we have ten different exposures, the bottom end having had ten seconds, the next nine, the next eight, and so on, the top having received only one. What the development will reveal, remains to be told in our next paper.

AN IMPROVED DEVELOPER.

A FRIEND sends us the following modification of Allen and Rowell's formula for ammonia-pyro developer. The original is made as follows:

No. 1.

Water...................... 5 ounces.
Sulphuric acid...............30 drops.
Mix and add
Bromide ammonium.........60 grains.
Pyrogallic acid.............. ½ ounce.
For use add 1 part to 20 parts of water.

No. 2.

Sulphite of soda (crystals)....360 grains.
Water..................... 4 ounces.
Dissolve and add
Bromide of potassium........180 grains.
Liq. ammonia (strong)....... 5 drams.
For use add 1 part to 20 parts of water.

The modified formula is as follows:

No. 1.

Water, distilled.............. 4 ounces.
Sulphuric acid, chem. pure.. 24 drops.
Mix and add
Bromide ammonium......... 50 grains.
Pyrogallic acid..............190 grains.
For use add 1 part to 20 parts water.

No. 2.

Sulphite of soda (crystals or granular).................240 grains.
Water...................... 4 ounces.
Dissolve and add
Bromide potassium..........180 grains.
Liq. ammonia (strong)....... 4 drams.
For use add 1 part to 20 parts water.

To make developer, use equal parts of the diluted solutions Nos. 1 and 2, but add No. 2 slowly, half at first, then a quarter (which is generally enough). Its action commences a little slower than other pyro developers. If the plate should prove to be over-exposed, throw out some of the developer and add more water to it. This developer will make a negative more like a wet-plate negative than any other.

OUR PICTURE GALLERY.

THE friends that send examples of their photographic work must forgive us for the long delay in noticing the various pictures we have received. We have had so much to do with the reports and notices of conventions and reunions, that everything we could put off had to go until a more convenient season.

Our friend, C. D. Kirkland, of Cheyenne, Wyoming, sends us a number of the handsomest cabinets we have seen from the West. Some of the pictures of gentlemen are gems. Fine lighting, natural posing, and careful retouching not overdone, make these very effective portraits. Only one or two of them seem to us a little over-toned and flat, but, all in all, the work is excellent. The pictures of ladies are also very good, but here and there a head seems a little strained for the pose. The best pictures among them are: 1. A lady with hat and feather and what appears a seal sacque, the pose being nearly full-face. Here the lighting, posing and modeling of the face are exceptionally fine. 2. A little girl, with hat tied over the ears poke-bonnet fashion, with strings of lawn under the chin in front. Here we have good lighting, easy pose and fine retouching, while the details in the drapery are very fine. 3. A profile head and bust of a young lady of uncommon beauty, with earrings and necklace. This is the best picture in what appears to us a batch of gems of artistic portraiture. We hope friend Kirkland will favor us with some of his larger work some day.

We have before us a copyrighted picture of two locomotives in a railroad accident. The one is literally upon the back of the other, and the sender writes upon the back of the card: "The ques-is, How did it get there, and how did they get it off? Weight of locomotive twenty tons." The photograph is in good detail and taken with snow upon the ground. If the sender will forward his name we shall be glad to give him credit for such good work; the print is stamped upon the back, but the letters are so much blurred as to be illegible.

We have quite a remarkable picture before us in the portraits, taken together, of the twin brothers Alex. and Louis Becker, taken on their seventieth birthday. Both these gentlemen were once in the daguerreotype business, and also manufactured stereoscopes. They enjoy good health and are in independent circumstances. The photograph was taken by Theodore G. Dimmers, of Fourth avenue, New York, and is an excellent piece of work.

Mr. Mowrey, of T. S. Harris & Co., at Skaneateles, sends us an excellent example of cabinet work. The negative work is excellent, but the print is toned too much to just please us.

Veeder, of Albany, sends us a good stereoscopic view of the funeral cortege of General Grant passing down the street from the Capitol building. As a piece of instantaneous work it is very good, quite sharp and clear, with good definition in the distance.

W. C. Russell, of Baltimore, sends us an uncommonly fine view of Harper's Ferry. It appears to be early morning, and the light effects are most exquisitely caught. We shall keep this picture as a piece of model work in landscape photography, and shall show it to our amateur friends. By the by, if amateur photography is stirring up such work as this, let it thrive, for professional photographers are able to successfully compete with the amateur in fine work, and as a proof of our statement we will show this beautiful picture by Russell.

Of all the funny pictures we have seen, "The Drummer's Latest Yarn" is, beyond comparison, the funniest. We have received a copy of this from Mr. J. F. Ryder, of Cleveland, O., who is the publisher of it. The artist of the original picture is Mr. A. M. Willard, of Cleveland, and the scene depicted is the interior of a car upon the Lake Shore road. The various faces are excellently caught, and the picture must be seen to be appreciated. As the story goes, the drummer told a particularly good yarn to a very appreciative man. His laughter increased so that he ultimately strangled and died from hysterics. The drummer has not dared to tell that story since. The whole action, the face of the drummer, his appreciative listener, and the eager face of the "small boy" in the seat opposite, are excellent beyond description.

We have before us two fine examples of enameled portraits made by La Roche, of Des Moines, Iowa. For this kind of work the results are first-class.

John Esmay, of Sabula, Iowa, sends us a number of capital portraits of babies. They are all very sharp and life-like, and among the best work of this kind we have seen. The same donor also sends some fine stereoscopic views taken around Sabula. The railroad bridge is very good, and the river scenes particularly so. The steamer Lizzie Gardner is one of the best pieces of instantaneous work we have seen; the cloud and smoke effects are truly wonderful. The tones of all the stereoscopic pictures are notably pleasing.

John C. Patrick sends us a picture of his exhibit at Buffalo. We noted his excellent work, but our limited space prevented our saying anything in our comments upon the exhibition. We are glad to see such good work by professional photographers, and that they do not leave all landscape photography to the amateur. We are looking at these pictures of Mr. Patrick's at a disadvantage in such a reduced shape; but even now under a good lens they exhibit much artistic work. They are all views taken in New Orleans, where we believe Mr. Patrick was one of the operators engaged in the Exposition.

From Mr. F. K. Scott, of the Watertown Camera Club, we have a 5 x 8 view of Black River Valley that is very good, and for several reasons: 1st, the distance and the foreground are both quite sharp; 2d, the details of foliage are well brought out; and 3d, the tone is good. We hope he did the last himself.

From M. L. Requa, of Oakland, Cal., we have a gem of instantaneous work. The scene is the ruins of an old water-wheel, with a boy fishing. The light chosen and the position of the view is thoroughly artistic, while the tone of the picture, a deep purple-black, is particularly good. This is one of the few cases where such a tone is effective.

C. M. Dodd, of Williams College, sends four quarter-size views and two 5 x 8 pictures. The small views are little gems, one only is a little flat, probably from over-exposure. The two 5 x 8 pictures are good for the given circumstances. Both pictures are of interiors, and the windows should have been covered with semi-transparent paper to prevent halation, which in both is quite strongly marked.

G. L. Lamson sends us several examples of his recent work. They are all very good, except the instantaneous picture of the train of cars; in this the shutter was not quick enough.

H. Butler, Vermillion, Dak., sends a couple of stereoscopic views of lightning, which are as sharp as anything of this kind we have seen. They were taken at 9 o'clock at night, and a faint outline of the foliage in the distance is visible in the views.

A number of landscape gems come from S. W. Burnham, of Chicago. Here an artist's eye has made the camera see with it, and the photographic plate has caught the beauty of every view. They are all exquisite little bits of scenery, but if we pick out the "Boat and Lilies," "Deer Park Canon, Ill.," "Spring Flowers" and "White Birch," we only prefer these just a trifle more than the rest of these truly beautiful bits of Western scenery. We hope Mr. Burnham will remember us again.

OUR ILLUSTRATION.

According to promise, we illustrate this number of the Bulletin with pictures made by Mr. Chas. F. Smillie on an extensive tour in the West. We have had many inquiries about these photographs, and are sorry that they have been delayed so long; but we now print them with the assurance that they will meet all expectations, and not detract from the well-earned reputation of the gentleman who made the negatives.

They were all made with the Anthony Detective Camera, using a Dallmeyer R. R. lens, and the prints are on ready-sensitized albumen paper. The variety of the subjects is quite interesting. The various modes of traveling—the railroad rushing along, and caught at high speed; the steamer majestically riding upon the great Mississippi with graceful motion; and the mule team slowly dragging its way across the plains—are all well captured by Mr. Smillie, and every picture is unique. He also caught views of railroad and other bridges, public buildings, animals, and some gems of scenery. In fact he seems to have captured a picture of everything that would prove a souvenir of his very interesting travels. How well he has succeeded we leave our readers to judge for themselves.

OBITUARY.

WALTER BENTLEY WOODBURY.

PHOTO-MECHANICAL printing has lost its best friend in the death of W. B. Woodbury. We cannot now realize the immense value of such an industrious life. To this man modern book and newspaper illustration owes its enormous development. By his persistent work in this line of invention, marvelously cheap reproductions of the works of great artists may be found in homes where, without such inventions as the Woodburytype, they would be unknown. The good results of the discrimination of such artistic work cannot be judged of from a monetary point of view. For the development of the taste for the beautiful counteracts the brutal tendency of men's natures, and indirectly softens their harder feelings. It makes men feel that there is something in the world to admire and enjoy besides mere bodily enjoyment, and impresses upon the mind the great truth of the words:

> "A thing of beauty is a joy forever."

Walter Woodbury's life-work has done more for the wide distribution of the love of art among the people than any man of his time, and the future alone can tell of its good results. We well remember the satisfaction shown at the results of his first efforts with his invention. How England was delighted to get moderately cheap facsimiles of works of art by his method, and how the beauty and perfection of these fac-similes were admired. But he has now gone to rest, and we must add our little wreath to the many laurels that deck his grave.

The following account of his life, from the *British Journal of Photography*, we reproduce for the benefit of our readers.

Mr. Woodbury was born in Manchester in the year 1834. His grandfather, Mr. Walter Bentley, from whom he takes his name, was well known as a naturalist; he was a bosom friend of Audubon and Waterlow. From his grandfather, his father having died at a very early age, Mr. Woodbury acquired a love for scientific pursuits, photography among their number. He was placed as apprentice in a patent office in Manchester, with a view to adopting the profession of a civil engineer; but this was brought to a close by his being allured by the glowing accounts of life at the Australian Gold Fields, to which place he sailed in the year 1852. For two or three years he there passed through a series of hardships it has not been the lot of many to encounter—cooking, driving a team to the diggings, acting as a surveyor's laborer, building, paper-hanging, etc., until by the introduction of government works into the country he was enabled to improve his condition by use of the profession he had been brought up to. Having now much leisure time he took up again with his old photographic pursuits, having become enamored with the collodion process before leaving home, and all his spare time while engaged in the Melbourne Water-works was devoted to his idol.

When the government work was brought

to a conclusion he started life as a professional photographer, but not caring much for Australian life, and wishing to take the opportunity of traveling, started on a trip, beginning with Java, intending to follow with Singapore, China, Japan, and Manilla, but found quite enough work to do in the first-named island to keep him there for five years, during which time his name became first known to the photographic world by the publication of a series of stereoscopic views by Negretti & Zambra, which were the first showing the beauties of tropical scenery ever introduced to this country. Having married and attained a small competency, Mr. Woodbury returned to England in 1863, after twelve years' absence, although he had managed to pay a flying visit to England in the interim while living in Java.

He took up his residence in his native town, and the year after, in experimenting with carbon printing, conceived the first ideas of the process now known by his name.

From that time to within a few years past, his whole time was devoted to combating the many difficulties that rose in the way before the process became really practical, and, notwithstanding the fact that during the last fourteen or fifteen years the process has been worked by many others in this and other countries, it remains substantially the same as when turned from its author's hands, steady improvement being simply the result of experience in working.

More than twenty times during the progress of the invention, difficulties that seemed insurmountable had almost caused its inventor to give it up in despair. The wonderful truth of surface necessary (which would astonish even Mr. Joseph Whitworth), the perfect glass-like character required in the paper, and many other points which are now happily surmounted, all required much hard fighting to get over.

The funeral of the late Mr. Woodbury took place at Abney Park Cemetery on Saturday, September 12th. Here a considerable number of those interested in photography had assembled. The service was brief, and, as the afternoon was lowering, the crowd soon dispersed. The grave is within forty or fifty yards of those of the late G. Wharton Simpson and H. Baden Pritchard—both intimate friends of the deceased—and lies close under the cemetery wall.

Mr. Woodbury died from the effects of laudanum. He was in the habit of using opiates, and it is thought that after the fatigue of his journey from London to Margate (where he died) he may have taken more than, in his exhausted condition, he was able to endure.

CONVENTION REPORTS.

Editors of the BULLETIN:

IN the last issue of your journal, page 564, you say that my complaints about "Errors in the Report of our Photo Convention" did not apply to the BULLETIN.

This can refer only to the discussions of the first day, which I corrected, but find that some of the corrections have been overlooked. The reports of the following days have not been corrected by me at all, and I am positive that they contain many errors in the remarks which I and other speakers are reported to have made, so that in many instances the sense is entirely destroyed. I do not wish to find fault with you, nor do I blame our reporter, Dr. Morgan, who, I believe, did as well as anybody could, considering the extremely difficult nature of the work.

To obviate such blunders in the future, I would suggest that all reports or proceedings be referred to a competent committee for revision and correction before publication, and, being a member of the Executive Committee, I shall make an effort to have some such plan adopted for our next Convention.

Yours truly,

G. CRAMER.

[We think Mr. Cramer's suggestion an excellent one, and should undoubtedly be carried out.—EDS. OF BULLETIN.]

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As I value the BULLETIN very highly, with its new dress and beautiful appearance, the good contents inclosed within its covers, and its food for thought, I couldn't do without it and keep a gallery. I would like all the numbers that are issued for 1885.

J. A. WILSON,
Illinois.

THE ST. LOUIS CONVENTION.

To the Editors of the BULLETIN:

IN regard to exhibits of photographs, the following is given as the probable action of the executive officers at their first meeting:

1st. The maximum amount of space allotted to any one exhibitor will not exceed 300 square feet.

2d. The pictures entered for prizes must be from negatives made since the Buffalo Convention, the exhibitor certifying on honor to this fact.

The intention is to insure a fair and square competition, which precludes the idea of any exclusive information, wherefore this early announcement, that all concerned may govern themselves accordingly.

Respectfully,

W. H. POTTER.

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LIGHTNING PROCESS.

RATHER DANGEROUS.

To the Editors of the BULLETIN.

A LADY called the other day to see about having her children's pictures taken, and asked how we took them.

I answered, "By the lightning process," and stepped into the other room.

She turned to the lady assistant and asked if it was not rather dangerous taking them that way.

She was asked what she meant, and said: "Why, he said he took them by lightning."

On being told that was just how quick they were taken, she said: "Oh, ah," and walked out of the room.

She probably had seen some of the advertisements of pictures being taken by the New Liquid Lightning, and possibly thought we had the lightning bottled up and ready for use.

C. P. McDONNELL.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

EXPERIENCE MEETING.—*Continued.*

MR. GRANGER—Our worthy mentor (Mr. Newton) has set me the example of an experience without a moral, and given me an excuse for occupying a small portion of your time with an account of a recent vacation trip, during which I made quite a number of pictures, some of which are good and some very poor.

I was recently sent to Denver, Colorado, on business for a company with which I am connected, and completing it sooner than I expected, with railway passes in my pocket I determined to go to California and take a vacation, advising no one at home of my whereabouts so I would have no telegrams or letters to bother me.

During my ride over the Central Pacific Railway and strolls around San Francisco, I often wished for my camera, and finally made up my mind to borrow one. Ascertaining the name of a gentleman who had a camera the size of mine, I called upon him, introduced myself as a member of the Society of Amateur Photographers of New York, and almost before I knew it I was walking away with his camera in one hand and tripod in the other.

After a day or two spent in and around the City of San Francisco, I went down the coast 125 miles to the old historic town of Monterey, the first capital of California, where in 1847 General Fremont first raised the stars and stripes and took possession of the territory in the name of the United States. Here I found many beautiful scenes and picturesque subjects among the old forts and missions and the hills overlooking the beautiful bay.

Monterey is the finest watering place on the Pacific coast. The Southern Pacific Railway Company has built a beautiful hotel and laid out magnificent grounds filled with beautiful tropical trees and vegetation. Of course there was here a great opportunity of making beautiful photographs, but I was unfortunate in not giving my plates sufficient exposure, so whenever I attempted to take a picture embracing much foliage my negatives were very thin. The best picture I made here is one when I forgot to put in any stop and upon a five seconds' exposure with a Darlot No. 2 lens wide open. This is the best foliage picture I have in my lot.

From Monterey I went across the bay to Santa Cruz, where I made many pictures with good success. The last plate I had I had placed in my camera for a picture of a beautiful street—one of the principal streets overlooking the bay, with steamers in the distance—when, just as I was about to expose it, four young ladies and four young gentlemen came along on horseback. They saw what I was doing and wanted their pictures taken. I consented and had them all nicely arranged, made my exposure, and—took out the plate holder without putting my slide back. The prettiest young lady came up and wanted me to promise to send the pictures to her. I said, "Oh, yes," and she is waiting for them yet.

From Santa Cruz I went up to the Geysers, that wonderful formation where hot springs and steam boil and bubble up from the ground, where the laboratory of nature is spread out in all its varied forms, and almost every drug in pharmacy may be scraped up, pure and fresh, from the ground and rocks.

I had no courage to take any photographs there, because there came a young Englishman with the finest English photographic outfit you ever saw, with camera of rosewood, holders and tripods nickel-plated, and with a Madagascar negro to carry his box, and a patent apparatus for changing his plates, requiring no dark room and only a few seconds of time.

I had no chance with him. He gave me four of his prints which I have here. One, he tells me, was taken during a very hard rainstorm so that he needed two umbrellas, one to protect himself and the other the camera.

From the Geysers, I went to Lake Tahoe, a wonderful fresh water lake high up in the peaks of the Sierra Nevada Mountains; in fact it is 6,400 feet above the level of the sea. In some places it is 1,700 feet deep, and the water, of a beautiful blue color, is so clear, that the bottom may be plainly seen at a depth of 180 feet. It is surrounded by heavily timbered mountain peaks capped with snow, and the mirror effects are wonderful. Here I met a young man who makes his living by making and selling photographs of scenery around the lake. He was very much interested in hearing of this society, and gave me much valuable information. He has a very convenient location for photographic work, having rented an old fisherman's cottage at the end of a long wharf, and when he has any negatives or prints to wash, he just puts them in a perforated box and drops it into the lake where the gentle "swash" of the water soon does the required work.

I have here quite a number of these pictures which I shall be pleased to show the members present, and I have also some of my own pictures which I should like to exchange with any member who may desire them.

[The pictures exhibited by Mr. Granger attracted much attention, and made it evident that there were few places which excelled California for beautiful scenery.]

Dr. WILLIAMS—I fear that I am too hoarse to make myself understood, and I don't know that I can report any experience that will be of special value to the society. I have just returned from a few weeks' rusticating in New Hampshire, but I did not have so varied or interesting an experience as the gentleman who went to California.

I took with me four brands of dry plates: the Stanley, Carbutt B, Kingston and Inglis. It would have been better, so far as the immediate results—the making of good negatives—was concerned, if I had taken but one brand. But the experience gained in the use of the different plates will be of more value to me than a few more fine negatives. Experience with different plates has taught me that there is no one plate which can be said to be the best for out-door work under all circumstances. Where very rapid work is required, I do believe the Stanley plate is the best which I have tried. When long exposures can be given, I have succeeded better with the Carbutt B plate than with any other. If it is inconvenient to carry more than a single make of plate, I should take the Inglis or Kingston. I desire to say a few words in the line of friendly criticism on the cutting and packing of dry plates. I believe this society is untrameled, and if its individual and collective experience is to be of any value, we—the individual members—must express our opinions unreservedly. I have been very much annoyed by finding from one to four plates in a box which would not go into my holders. Glass varying greatly in thickness is often found in one box. These are faults which should be remedied. I have found the Carbutt and the Kingston plates quite free from the defects which I have just mentioned. The Kingston plate is the best packed plate in the market so far as my experience extends. Corrugated paper is used in the ends of the packing-box, so that each plate is firmly held independently of the others. Any number of plates may be taken out, and those remaining in the box may be transported without fear of injury. Why should this method not be adopted by other manufacturers? One manufacturer, who makes a fine plate, uses twine between the plates in packing. I regard this as an inexcusably wretched method of packing. I have a vivid recollection of a long tramp, which included some vigorous mountain climbing, to get an exposure. I returned and developed my plate to find that I should have had a beautiful negative but for a dark streak extending across the plate where the twine had got displaced. This is almost certain to occur if a part of the plates are taken out and those remaining transported a distance. Let the manufacturers give us the best work which they can produce and charge a fair price for it. Competition in prices is always dangerous, and this is especially true when anything of an artistic nature is involved.

[Mr. Williams then handed around some very fine 6½ x 8½ photographs taken by himself this summer at Dixville Notch, N. H., one of the most picturesque spots in this country. At the Dixie House he found a dark room admirably suited to the development of plates, and so was able to develop his negatives on the spot and make second exposures when the first ones were defective.]

Mr. Ripley—I do not want to pose before this society in the wrong light. You all know that I have been standing in the rank of amateurs. The few words I have said to-night, I have said at the special request of our President, Mr. Beach. I was waiting to present my resignation as an active member until the regular meeting, but have spoken of it now, in justice to myself and the society, because I felt particularly delicate in posing as a sham amateur.

Mr. Partridge—I believe that he has just as much right on this floor as any one else.

The meeting then adjourned.

Regular Meeting, Sept. 8th, 1885.

A regular meeting of this society was held at the rooms, No. 1262 Broadway, on September 8th. It was called to order at 8.23, *President* Beach in the chair. The President announced social meetings for the 16th and 30th of September and October 2d, and a special meeting for the 22d of September. At that time, he remarked, we expect to have a new kind of magic lantern shown here, where two gases are manufactured on the spot, and it is not necessary to have any cylinders or bags, and he thought it would be quite interesting. There might be some exhibits of slides in this lantern, and he requested any who had slides to exhibit to bring them. He also called attention to the fall exhibition of photographs by members, and hoped they would take an interest in it. It would probably occur some time in the latter part of October, and if any of the members had fine pictures, then would be the time to bring them out. He continued: Since our last regular meeting in June, we have planned two excursions down the harbor. Owing to bad weather one was given up, and to the other we could not get enough to go because it was late in the summer. We might get up another the latter part of this month. If I could get up a party of eight or ten, we might arrange it. The cost would not be more than four dollars apiece. The plan would be to have a tug of our own, and go where we please.

Since that meeting I have also attended the convention at Buffalo. I was pleased to note the good feeling which existed by the professionals toward the amateurs. I was told by several professionals that they regarded this society as the leading society of the country, which was, of course, very satisfactory. There were many interesting exhibits, but among the pictures a surprising absence of landscapes.

I have a remarkable picture here taken by M. Ducom, who went up in Professor Tissandier's balloon, and this picture was taken when the balloon was two thousand feet above the city of Paris. It was taken with a long focus lens pointing down, and a snap shutter was used. The beauty of it is that you can see the carriages, the people walking and the boats sailing. It looks like a plan view of the city, and every detail appears sharp, even the ripples on the water. Professor Stebbing, of Paris, sent this to me, and he also wrote a pleasant little note, which Mr. Canfield will read. [Letter read.] The picture was passed around, and was much admired.

I also had a letter from Mr. W. B. Tyler, corresponding secretary of the Pacific Coast Amateur Photographic Association of San Francisco. He sent me quite a lot of pictures, and Mr. Canfield will pass them around for inspection. I asked him if he would be kind enough to send me his formula for printing, as you will observe that the prints possess a very pleasing tone. The following is his formula:

A sensitive silver bath is first made in the following proportions:

Distilled water................	1 oz.
Nitrate of silver..............	45 grs.

The sheet of paper is floated on this for ninety seconds, then drawn off over a glass rod at one end of the bath, drained, and blotted off with blotting-paper, and finally dried with heat.

The sheets are then hung up in a fuming box having a saucer containing some strong liquid ammonia placed on the bottom. After remaining in the box for twenty minutes, and sometimes longer, which corrects all acidity that may have been in the bath, the paper is removed and is then ready for printing.

The paper should be printed rather deeper or darker than is customary for several toning baths, otherwise it will bleach out too much.

After using the nitrate bath, it is carefully sunned, and is then decanted and filtered, perhaps once a month. The

TONING BATH

is made of

Water	32 oz.
Chloride of gold	8 grs.
Bicarbonate of soda, quant. suff.	

to make the bath slightly alkaline when tested with red litmus paper.

A pinch of common salt is also added.

Before toning, the prints are carefully washed in three or four waters, a small quantity of acetic acid being added to the first water. The toning should be carried up to a rich purple. The prints are then washed and fixed in fresh and strong solution hyposulphite soda for fifteen minutes.

Mr. CANFIELD then read a portion of Mr. Tyler's letter, sent to Mr. Beach, inviting members of this society to visit him when in San Francisco, and extends hospitalities.

The *President*—I also received a large package of 5 x 8 California photographs from Edward P. Gray, a member of our society, and resident of San Francisco, Cal. He says: All but two or three of the negatives were developed with Beach potash developer.

The pictures were passed around, and were noticeable for their clearness and good technical execution.

The President then referred to a new scheme, which he was interested in getting up, called "The International Photographic Exchange." If any members here would like to join, they will please communicate with me.

I have a peculiar picture here, taken by Mr. Sidney Bishop, one of our members, called "What'r yer givin' us?" It was taken on Forty-second street. He says: "I had one unexposed plate left, which happened to be ready for action. The boy approached me with the sun shining upon him and said: 'Buy a paper, Mister?' I said 'No, but I am going to take your picture.' He replied: 'What'r yer givin' us?' At the same instant I snapped the shutter, and that is what you see. He is saying 'What'r yer givin' us?'" Mr. Canfield then passed around some twenty or more 4 x 5 unmounted prints, made by Mr. W. B. Tyler, previously mentioned, comprising mostly marine views on San Francisco Bay, and of the various kinds of craft that can be seen there. One or two views of Italian fishermen and their boats, and of the peculiar yawl-rig yachts so popular in that region, were especially good. The uniformity of the prints, as regards their tone, indicated that Mr. Tyler had completely mastered the art of good silver printing.

An improved Parsell camera, made for Mr. Edward P. Gray, of San Francisco, Cal., by Mr. William T. Gregg, of this city, was next exhibited and explained by Mr. Beach. It is made for 4 x 5 plates, and the camera proper is inclosed in a neatly covered black leather box. The rear of the camera is provided with a ground glass for focusing, which is attached to upright springs. The plate holder is put in place by pulling the ground glass back and slipping it down between the glass and the camera. The conical metal front portion of the camera slips over the tube of the lens, and at the joint is lined with billiard cloth to make it light-tight. To focus, a clamping screw is released and the back of the camera is then quickly drawn in or out by the hand.

A shutter, made in the form of the figure 5, rotates between the lenses, and is operated by a flat spring, the tension of which can be easily increased or decreased. Directly adjacent to and in front of the shutter, working vertically between the lenses and in the same plane, is a diaphragm disk, which rotates on its own axis similar to the disks in wide angle lenses, enabling the operator to quickly bring any sized diaphragm into position, thereby dispensing with loose diaphragms. The arrangement permits the camera to be used for a time exposure with a small stop when desired.

Mr. RIPLEY exhibited an 8 x 10 camera made expressly after his own design; its peculiar feature was its compactness and lightness. It was provided with a reversible back, so the picture could be taken up or down or lengthwise, and the broad base was hinged near the rear, permitting it to be folded up against the back frame. The lens front and frame, with the bellows, could be pushed within the back frame, and when this was done, and the board base folded up, the back frame formed a box to hold all.

Attached to his lens tube, Mr. Ripley had a new Hoover patent combined diaphragm and shutter, which was placed at right angles to the length of the tube midway between the two lenses.

The working parts are inclosed in a neat vulcanite case, and as the shutter acts as a diaphragm as well as a shutter, loose diaphragms are not required. Two thin vulcanite slides, having square-shaped apertures equal in size to the full opening of the lens cut in one of their ends, are worked to and from each other in the direction of their length by a pivoted operating lever, pivoted in the center of its length, and loosely attached by a pin at each end to each different slide.

One of the advantages claimed for this shutter is that it cuts a sharper instantaneous picture than would be possible for an open lens with a simple drop shutter, as the diameter of the diaphragm constantly varies with the motion of the shutter slides.

Mr. Ripley operated the shutter before the audience, and explained its operation. Being somewhat of a novelty, it attracted much attention, and was examined with great interest.

The *President*—I have the pleasure of presenting to you this evening Mr. David Cooper, who will explain the Eastman-Walker Roller Holder used in making paper negatives, and will afterwards develop some of the exposures he made to-day. I need not say that the holder is one of the latest inventions in photographic apparatus, and, as far as I know, one of the finest pieces of mechanism we have.

Mr. COOPER—Mr. President and gentlemen: By your kind permission, I am present to-night to direct your attention to a subject of extreme interest to the photographic world at this moment, and, to the best of my ability, describe both the mechanical and chemical means by which negatives may be produced on the Eastman improved negative paper. This method of working has an undoubted right to the claim of novelty, aside from all other reasonable claims, mechanical or otherwise, on the ground that it alone (among all the attempts at making film or paper negatives by a continuous web) is commercially, as well as experimentally, an acknowledged success.

That others have attempted to place on the market an apparatus for accomplishing the results we get from our holder and negative paper, we are well aware; but so imperfectly was the field occupied, and so unsatisfactory the results from a practical point of view, that our efforts have, with but *very* few exceptions, turned up virgin soil. The exceptions are to be found only among the few public-spirited men who are willing to sacrifice their funds on the altar of investigation.

These, without exception, regard our method with the confidence which experience with others less perfect, teaches them is its due.

I am fairly well versed in the technical phraseology of photographic chemistry; but mechanical descriptions find me off my sea legs, as I invariably get toggles and frogs and cams into an inextricable and unintelligible mess every time I tackle the subject. But, luckily for the roll holder, I am ably seconded by my friend Mr. S. C. Jones, whose knowledge of the subject is only equaled by his eloquence and descriptive ability.

Mr. President, Mr. Jones will now describe the Eastman-Walker Roll Holder.

Mr. JONES—exhibiting roll holder—This, gentlemen, is the Eastman-Walker Roll Holder. On drawing the slide, you will see what appears at a little distance to be a plate for photographic work; it looks perfectly flat, and is indeed more so than the ordinary dry plate of commerce. On opening the holder in this way (springing the brass side catches), I lift the wood-work facing and key valve and disclose the inner works; these at a distance may seem complicated, but on closer observation you will admit their extreme simplicity, and with little experience find that you can insert the roll of sensitive film not only by dim light, but in absolute darkness.

From your point of view you will observe that the general make-up consists of four rollers, two at each end, and a flat board or table over which the paper is drawn from one side to the other, the whole supported by a graceful structure of the lightest brass castings consistent with solidity and durability. The bright works are the thumb-screws used for tightening the rollers when in position, and in two instances are fitted with milled pawls, in the one case to take up the slack and retain the tension on the paper when in position, and the other in which the key is inserted or screwed for the purpose of turning off the exposed surface and replacing it with a fresh one.

I will now proceed to insert a spool of plain paper, which will represent the sensitive film.

Mr. Jones then showed the operation of the roll holder, which was described in the BULLETIN recently.

He finally said:—As the spool contains enough paper for 24 negatives, and combined with the weight of the wood-work, etc., of the holder does not exceed that of two of the lightest loaded dry plate holders of the same dimensions of plate, you will not fail to see the advantage which it must be to all enthusiastic lovers of the art. Trusting you have not been wearied by my lengthy description I will now make room for Mr. Cooper, who will explain the difference between the holder I have just shown and another make which has been introduced in England.

Mr. Cooper here showed the Warnerke "Roller Band Slide," and described wherein it differed from the one just shown, principally calling attention to the inadequate provision for measuring the lengths of paper rolled off. He explained a peculiar electrical device connected with it for assisting in determining where the exposed surface had been wound off.

Mr. Cooper, before commencing his demonstration in development, mentioned that he had gone out in the afternoon to make some instantaneous exposures to be used in demonstration, but the sun had gone back on him and so he had to make all his instantaneous pictures without sunlight direct. He didn't expect much of them, but would try to do the best with them under the circumstances. They were made from the dock and exposed upon the steamer Shady Side near Fulton Ferry, looking towards the bridge, it would appear in most of them. The time was between 3 and 4 o'clock. The stop used was about ½-inch, with a lens of 13-inch back focus and 2½ inches diameter. The shutter used is known as the Prosch, and was worked at about three-fourths of its greatest speed.

The lights being all turned out, with the exception of one burner with a ruby chimney attached, Mr. Cooper commenced development, aided by Mr. Jones, who did the cutting of the paper from the spool.

The developer used was from the formula given hereinafter, and was composed of

No. 1..................	2 ounces.
No. 2..................	2 "
Water..................	32 "

This being very dilute, the paper sheets, after having been soaked in water about 20 seconds each, were placed as rapidy as possible into it, and after an interval of about two minutes, which were occupied by Mr. Cooper answering questions from various members pertaining to development, the images began to appear. There were ten 8 x 10 negatives in the developer being developed simultaneously. After the images had presented themselves fully, and were allowed to advance sufficiently far enough to admit of the amount of detail in the shadow expected from such being seen, Mr. Cooper made the addition of 60 grains of pyro dissolved in 2 ounces of water with 200 grains soda carbonate, when immediately the intensifying began and the negatives rapidly increased in density. As soon as development was complete, which was judged after the negatives presented about one and a half the strength of an unfixed dry plate, they were placed, after thorough rinsing, by Mr. Jones for half a minute in a solution composed of—

Common alum	16 ounces.
Water..................	64 "

After which they were transferred, without further rinsing, to a bath consisting of

Hyposulphite of soda....	8 ounces.
Water..................	32 "

In all these operations the negatives were treated as nearly simultaneously as possible. The fixing was quickly accomplished, which was apparently the result of the solution acting on the negative on both sides. This fact holds good in the process of washing also, greatly facilitating that operation.

Following the development, the following questions were asked by the President and answered by Mr. Cooper.

The *President*—How do you varnish the paper negatives?

Mr. COOPER—I do not consider it necessary to varnish them, except possibly in the case of portraiture, when it is desired to specially protect the retouching. The process of oiling renders the surface of the negative repellant to moisture, and is therefore quite as good a protector as varnish.

The *President*—Please explain the process of oiling?

Mr. COOPER—The negative being washed, and thoroughly dried, either by squeegeeing to the surface of an oiled glass, from which it will fall when perfectly dry, or by laying back down on clean paper, is ready for oiling. To oil, it is well to provide, first, a pad consisting of about six thicknesses of folded manilla paper. On this lay the negative, face down, and with a thick bunch of flannel or cotton-wool swab the back with castor-oil, using say a teaspoonful for a 5 x 8 negative. Then with a flat iron, as hot as is generally used for laundry purposes, rapidly smooth it with an even pressure all over, following the path of the iron rapidly with the swab of cotton, which, being saturated with oil, rapidly fills the pores of the paper as soon as they are freed from the air in them by the heat. A negative, when properly oiled, should present an even dark surface, without any appearance of grain or mottle.

It is only necessary after this operation to wipe the free oil from both the face and back of the negative, drying the face as carefully as you can, and then proceed to print in the ordinary manner by laying it on glass of suitable size and bringing the sensitive paper in even contact by pressure. No fears need be entertained of injury to the print from the presence of oil. In my experience so far, I have not seen a single print that was injured by the presence of oil. Although I have seen many that certainly had oil on them, which could only be seen by holding them up so as to transmit the light, it was quite impossible to see it on the surface.

[Here some prints were shown to demonstrate this fact.]

The *President*—Can lantern transparencies be made from these negatives that will show no grain when projected on the screen?

Mr. COOPER—My own experience is limited on this point, but I will state that of a gentleman who ordered a full outfit to make pictures in the Yosemite for lantern transparencies, a branch of the profession he devotes himself to exclusively.

His decision in favor of paper was made only after he he had practically satisfied himself of the possibility of making perfect slides from the paper negative.

The *President*—What is your reason for starting development slowly and finishing subsequently with stronger solutions?

Mr. COOPER—My reasons were three: first, because I was desirous of speaking on the development while at work, and wanted time to do so; second, developing ten at once needed a dilute starter, so as to control them more readily; third, very dilute developers have the tendency to make thin, flat negatives full of detail, but weak. I obtain this result first, and then rapidly intensify by my addition of strong pyro. This gives me softness of detail, if wanted, or extreme density if desired.

The development of paper negatives should be continued until the image presents about from one and a half to twice the density of a glass plate.

The *President*—In the formulas you employ, do you use 437 or 480 grains to the oz.?

Mr. COOPER—All formulas for this work should be made up at 480 grs. to the oz., except in the case of No. 2 solution, which is based on 437 grains to the oz.

The *President*—How do you judge when a negative is properly fixed?

Mr. COOPER—By looking through it as with a plate. The appearance is marked, and cannot be mistaken. Wherever the bromide of silver remains, an opaque appearance is presented.

The *President*—What light do you prefer for development?

Mr. COOPER—Either yellow post-office paper, or green and yellow cathedral glass if of safe tint and density.

Although the exposures had been made under difficulties, as regards the strength of the light, Mr. Cooper succeeded in bringing out ten good negatives, making the demonstration eminently successful, and very satisfactory to those who witnessed it. He promised to present the negatives to the society as souvenirs of the occasion.

The following is his formula:

No. 1.

Sulphite sodium crystals, pure (480 grs. to oz.)	6 oz.
Distilled or boiled water	32 "
Pyrogallic acid	480 grs.

No 2.

Carbonate soda, pure (437 grs. to oz.)	4 oz.
Water	32 "

Prior to adjourning, a cordial vote of thanks was unanimously passed to Mr. Cooper and Mr. Jones for their very interesting and entertaining demonstration.

At 10.15 P. M. the meeting adjourned.

PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

REGULAR meeting of the Pacific Coast Amateur Photographic Association, Thursday evening, September 10, 1885, at the rooms, 318 Pine street, President Smith in the chair. Minutes of previous meeting read and approved.

The Field Day Prize Picture Committee, Messrs. Lowden, Lange and Gibbs, unanimously awarded the prize to Mr. Woods, whose negative (a 4 x 5) was the smallest taken on the recent field day excursion to the old mill.

Several members contested for the expectation prize print, Mr. Woods being again victorious. The gentleman is certainly to be congratulated on his success, because in the field-day class the print which showed the greatest technical and photographic merit was selected, while in the expectation class the committee consisted of two artists, Messrs. Virgil Williams and J. B. Wandesforde, who judged the prints from an artistic standpoint, paying comparatively little regard to technical excellence. The subject chosen abounds in possibilities, and all the prints handed in are worthy of description, but I shall have space only to mention a few of the most noticeable. Mr. Woods' print was half-plate size, and represented a deep, cold-looking forest, with huge tree stumps and interlacing branches. By the side of a tree in the left foreground stands a man holding a gun to his shoulder. The pose is perfect; every line of the figure shows a strained and resolute attention to something beyond and just out of sight in the dim background of the forest. The weirdness and mystery of the picture were aptly described by the following lines:

> "Long rested he by the tum tum tree,
> And as in elfish thought he stood,
> The Jabberwock, with jaws of flame,
> Came whibling through the tangly wood
> And burbled as he came."
> *Alice, Behind the looking glass.*

President Sidney Smith's picture (5 x 8) represented a young girl standing in a shady garden path with a small pug dog beside her, who is anxiously waiting for the lump of sugar which his pretty mistress tantalizingly holds just out of reach. The light is well managed and the picture a gem.

Mr. Tashiera's contribution was a whole-plate print of himself in the act of developing a negative. The accessories are excellently arranged, while expectation is apparent in every line of the gentleman's face and body.

A comic little picture by Mr. Gibbs, represents five little boys seated on the ground in a row before a camera, the cap of which is just being removed by the operator, while models and artist are all unconscious of the presence of a larger boy, who, in his eagerness to see what is going on, has obtruded his head and most of his body into the foreground.

A long discussion as to the subject for next month's picture took place, and the following subjects were proposed: A Dilemma, A Hard Blow, Shelter, Taking it Easy, Satisfaction, Alert, Homeward Bound, Contentment.

A ballot being taken, A Hard Blow had a majority of votes, and that subject was chosen for illustration.

The report of the committee being favorable, Messrs. E. J. Molera and E. R. Abadie were elected members of the association.

Resolved, That the exhibition of this association be held at the rooms of the Art Association some time in January, 1886.

Discussion as to details was cut short by the appointment of Messrs. Lowden, Tashiera, Gibbs, Tyler and Williams as a committee with full power to act in the premises. It is probable that all the amateur societies will be invited to contribute.

Mr. Tyler exhibited his new detective camera and prints made therewith; also two prints from negatives made at the Grand Opera House during the performance of the spectacular play of Undine. (These will form the basis of separate articles).

Some paper negatives made on Eastman's films, and prints from the same, were shown, and voted a success, The process was described at length by the different members who had tried it.

On motion, adjourned.

The meeting was the largest and most interesting held this year, twenty-one members and two guests being present.

W. B. TYLER,
Cor. Sec.

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PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

AT a special meeting of the Phila. Am. Photo Club, at their rooms, 907 Filbert street, on the evening of September 11th, *Vice-President* HAINES in the chair, Mr. A. J. Casseday, of the Eastman Dry Plate and Film Co., gave a most instructive demonstration of the working of the apparatus and films of his company, in the presence of a large number of the members, who take great interest in the proceedings.

At 8.30 P. M. Mr. Haines called the members to order, stating the object of the meeting, and at once introduced Mr. Casseday, who proceeded to enlighten every one upon the mysteries and intricacies of the roll-holder for the continuous sensitive films, charged for the occasion with a roll of plain paper which answered the purpose admirably.

The details of this marvelously simple little apparatus need not be gone into here, as the journals are just now "full of it," with cuts and lengthy descriptions. Our members took a great interest in it and fired Mr. Casseday right and left with questions concerning it, all of which were readily answered by him.

After the roll holder, the demonstrator showed several very beautiful films, all of

Philadelphia subjects, already developed. These were absolutely perfect. Then came the developing of a number of films. This was of particular interest, and the ease and certainty with which Mr. Casseday handled the development made it appear as simple as A B C, which it really is. After this came the oiling and squeegeeing of films made by the demonstrator and by several of the members, who had anticipated Mr. Casseday and made some on their own account.

It has been supposed by many that lantern slides could not be made from these films, but our amateur friends in different parts of the country may rest assured that they can be. Mr. Casseday showed one that had been made in this city, and it showed not a trace of the texture of the paper used in backing the film.

Everything passed off pleasantly and the meeting adjourned at a late hour, with a vote of thanks to Mr. Casseday for his very exhaustive demonstration of this latest step in the advancement of our beloved art.

A. C.

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THE PHOTOGRAPHIC IMAGE.

BY CAPT. W DE W. ABNEY, F. R. S.

(*Continued from page* 409.)

I NOW pass on to the photographic or developable image, and the general arguments apply, whether it be assumed that metallic silver or the sub-haloid is produced by the prolonged action of light. In a small book which I published on emulsions some two years ago, I have assumed that the photographic image is formed by a sub chloride and sub-bromide of silver, and I have recently been taken to task for not having proved the similarity between the visible and the invisible image. What I said was this: "Evidence of the most unmistakable character points to the chemical theory of the formation of the photographic image—evidence so strong and so well known that it would be out of place to record it here." Now I find that I have made a mistake. It appears that it would not have been out of place, and that the evidence is not strong. That being the case, I will endeavor, in a subsequent edition of the work in question, to supply the want, and meanwhile will give some of the evidence which is sufficiently strong to prove my assertion as to the truth of this theory. In continuation of the above quotation, I say: "Briefly, we may say that the action of light seems to be to reduce it to a simpler type, which we may call the sub-haloid. Thus—

Silver bromide	gives	Silver sub-bromide.		Bromine.
Ag_2Br_2	$=$	Ag_2Br	$+$	Br

If any reader will not admit it, he should read all the various evidence that has been adduced since the time when Scheele first made his experiments with silver chloride, and we doubt if he can remain unconvinced—more particularly in regard to the *visible image* formed on the bromide and chloride." Two writers have seized this last sentence, and, with an ingenuity which does credit to their labors at the desk, have endeavored to make it appear ridiculous—not to strengthen their case, which I hold to be bad, but to weaken mine. I would seriously repeat my invitation to them as to their course of reading, allowing them to include the earlier literature from the time of Bacon, which one of them recommends for my perusal, and would still hope that they may profit by it. Continuing the same paragraph, I say: "It is a pertinent question to put as to whether the visible and the invisible (or developable) image are of the same nature; which may be answered by another question: Can the line be drawn where the image is invisible? If so, what is the boundary between the two? If we admit the theory of the formation of the visible image, it seems hardly logical to deny a similar formation for the invisible or photographic image. It is quite possible that beings with more acute sight than ourselves might be able to see the image which we cannot. As we know, certain insects can hear sounds which do not affect our auditory nerves. Colored particles are visible when put together *en masse;* but if only a few colored particles are present in a mass of colorless particles, it is quite certain that they may remain undetected." Now I have nothing to modify in these last sentences, and I invite the attention of the members present to the argument: Can it really be asserted that there is a boundary between the visible and invisible image? Take a couple of plates and coat them with emulsion, and place them in a conducting solution, and connect the films with a very sensitive galvanometer. Allow light for a second to fall on one plate; there will be a deflection of the needle, showing that chemical action is taking place on it; expose for a time sufficiently long to discolor the film, and the same result occurs. There is chemical action, then, in both cases; what is the difference between the two? The chemical theory of the photographic image is based upon the fact that where light of a proper kind acts on a molecule the atoms are made to swing, however short be that exposure. If it be for a second, the average number of vibrations which light of a mean wave length makes is somewhere about 700 million millions (a goodly number), and which, if the blows by the ether be well timed, is sufficient to make an atom of chlorine or bromine fly off from the molecule; or, in other words, sufficient to make it swing out of the sphere of molecular attraction, particularly if some other molecule is near which is ready to abstract it and incorporate it with its atoms, and so to form a new body. Let us stop and see whether such is the practical and not theoretical action. Take bromide of silver emulsion in collodion, which, when pure, is almost an absolute neutral substance, and what occurs where it is used dry? It is sensitive to a certain extent; but add some bromine-loving preservative to the film, and the sensitiveness is much increased. If the condition of the bromide under the action of light were merely changed in the arrangement of the atoms, but not a chemical change, what would be the use of the bromine absorbent? It ought to be positively detrimental. Let us take still another example of this. If a washed iodide of silver emulsion is prepared with excess of iodide, and a plate be coated with it and exposed, no image is developable. Dip half of such a plate in a solution of tannic acid, or beer; again expose and develop. The half that has an iodine absorbent will develop; the other half will not. Surely the beer or tannic acid is not capable of allowing the physical molecular attraction of the molecule to be altered, which must be the case, adopting the physical hypothesis of the latent image. The chemical theory explains it immediately. One of the most remarkable proofs of the truth of the chemical theory of the formation of the photographic image is found in the explanation of some experiments which I made on the effect of the spectrum on mixtures of the haloid salts of silver, an account of which is published in the *Proceedings of the Royal Society*. It is there shown that if you have a mixture of pure iodide and bromide of silver and expose it to the spectrum, that at the place where the iodide alone would show the greatest action or development, the image has been destroyed by liberation of bromine from the bromide which is in contact with it, and which is also acted upon by rays of the same refrangibility. Now no mere physical theory of the photographic image would account for this. Instead of the developed image being almost *nil* at this particular part of the spectrum it would be increased in intensity, and such increased intensity is to be found if the two be exposed in the presence of silver nitrate, which will take up the bromine and iodine liberated by light.

One form of the physical theory of the photographic image is that the light sets up vibrations, and that whilst no chemical change is wrought, yet that it is the increased vibrations which give the developing power, and that when the vibrations cease the image is non-existent. This is a theory which seems to me like one to be found in a story by Jules Verne, and to be one of those ideas which have to be relegated to the same limbo as perpetual motion. We hear of a gelatine plate being exposed, and developed with unimpaired vigor after a lapse of twelve or twenty months. I myself have kept gelatine plates a year, and developed some of them every three months. These plates were exposed behind a sensitometer, and kept to ascertain if there were any fading of the image. Plates which gave twenty-two on the sensitometer at first, after a lapse of a year from the time of exposure, gave an image showing twenty-one. Hence we have to conclude that the vibrations commence at a certain time, kept of the same amplitude, or nearly so, for the space of a year. The question is, can that be so? If a collodion plate is treated in the same way, the image will die out much more rapidly. A couple of months is sufficient in most cases to obliterate nearly every trace of an image, and yet it is the same material acted upon in both cases. Why should it act differently in the two cases? The answer to this is somewhat hard, I imagine, on the vibration hypothesis; but it is perfectly easy on the chemical theory of the photographic image. I scarcely need repeat papers which have appeared in this journal on the destruction of the photographic image, in which I have shown the cause of such destruction on the chemical theory. Exposure to the atmosphere, or to a substance which can oxidize the image, has been shown to destroy the developing capacity of the image, and the difference of the exposures of the bromide in the gelatine and collodion plates fully explains the reason why the destruction is more rapid in the one case than the other.

Again, we can absolutely show that if increased amplitude of vibration be given to the atoms of a bromide plate, that such vibrations subside rapidly. If we take a hot iron and press it to the back of a gelatine plate, and expose it to light whilst hot, and then, after cooling, develop the plate, we get an image of the iron shown by increased blackening of those parts which were in contact with the glass heated by the iron. If, however, the hot iron be applied to the back of the plate as before, then the plate be allowed to cool, and after such cooling the plate be exposed to light, no trace of the iron shape is visible; the plate returns to its normal condition.

In the one case we have the amplitude of the vibrations of the atoms of the molecules (which, when at any temperature presumably above the absolute zero, are always vibrating) increased by the application of the hot iron, but not sufficiently to throw off the atoms. Where light of proper color impinges on these atoms, which are already swinging with increased amplitude, they are more readily swung off than when it has the whole of the work to perform upon them, and, as a result, we have the image of the iron shown by the increased number of molecules which have been deatomised. In the other case the plate is heated, and the increased amplitude of vibration must still be there, as in the other case, and, according to the vibration theory, should continue; but the fact is that it does nothing of the kind. The atoms resume their normal swing when the plate is cold. It is for those who hold the physical theory of the formation of the photographic image to explain why the increased amplitude due to the heating dies away, whilst that due to light does not. The chemical theory, then, fully accounts for these experiments, which, as far as I am aware, no other theory does.

Let us take another experiment. Take a bromide collodion film and expose it in a solution of peroxide of hydrogen, a solution of permanganate of potash, or hydrochloric acid, and attempt to develop an image. The result will be failure. Expose another plate in any substance that will absorb bromine, such as sodium sulphite or potassium nitrite, and an image is at once obtained. There is no reason for these opposite results according to the physical theory of the photographic image, but there is according to the chemical theory. In the one case the developing power of the image is destroyed by an oxidizing agent as fast as formed, in the other the liberated bromine is taken up at once and the image is preserved. A certain experiment by Mr. Carey Lea has been quoted against the chemical theory. He took pure iodide of silver on a clean plate, and on it he could at first develop an image after exposure to light, and that a similarly-prepared iodide plate which had received also an impression of light faded away and refused to develop. The paper already quoted on the destruction of the photographic image disposes of this, and is certainly no crucial experiment as to the vibration theory. I hardly know that I need continue these ordinary every-day proofs of the truth of the chemical theory. A simple molecular change of form will not do it. That a change in molecular form is possible we know. In a gelatine plate the range of spectrum sensitiveness is far greater than in a collodion emulsion of the ordinary type; whilst in the special green form of collodion emulsion we have a still different molecular arrangement, in which the atoms are so placed that they answer to the swing of the dark rays below the red. Yet these molecules are still bromide of silver, and not capable of development till they have received the well-timed shocks of light. Sensitiveness means placing the atoms which compose the molecule in the state of most indifferent equilibrium possible, so that a small shock will set free the halogen. One word more. When a substance which is in a state of tottering equilibrium is made to take up a position of stable equilibrium, energy is given out (thus a gun-cotton molecule when detonated gives out energy); but the energy it gives out is exactly that which it would take to set the atoms from the position of stable to tottering equilibrium. So in preparing an excessively sensitive salt of silver, energy has to be applied to set it in this equilibrium, hence we arrive at the measures taken in a gelatine emulsion to change the molecular form by applying heat and so on.

I should be glad of hearing of any single experiment which can be explained by the vibration theory, and which cannot be as easily, and in all probability be better, explained by the chemical theory. On the other hand, I think I have given experiments which can alone be explained on the latter theory. Let me say that the chemical theory is more than a mere working hypothesis. Experiment after experiment proves its truth, and there is not so far a single experiment to my knowledge which disproves it.

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It is only the woman who is given away in marriage. The man gives himself away before the honeymoon is over.

[*From Photographische Correspondenz.*]

THE TRANSPARENCY OF GLASS FOR ULTRA-VIOLET RAYS.

BY V. SCHUMANN.

(*Second Part.*)

It is some time now since I have been occupied with the examination of the light absorption of crown glass. The result of those experiments was so favorable, that I was led to extend them upon flint glass. I selected for this purpose a quality of medium refrangibility, such as is generally used for the production of lenses.

A flint-glass wedge of 30 *m. m.* length, 15 *m. m.* width and 0.0603 to 2.0 *m. m.* thickness, with optically polished plano surfaces, was, as formerly, inserted in the passage of the rays. Otherwise my experiment was the same as before. Only the thickness of the glass through which the ray had to pass deviated from that of the crown-glass wedge. It amounted to 0.1072, 0.6748 and 1.2000 *m. m.*

The flint glass showed a far greater resistance than the crown glass. At 0.1072 *m. m.* thickness of stratum, I obtained, under the most favorable conditions, only λ 292. The more refractive iron lines never developed, even after enlarging the slit to ½ *m. m.* and exposing for 15 minutes. At such an uninterrupted exposure the transparency of crown glass, which I again examined with this opportunity, was even greater than I had found before. Its spectrum terminated now at Cd. line No. 17, ⅔ Cd. line No. 18, and not to λ 266. The absorption proportion was even still more unfavorable, as might appear from my crown-glass portion being only 17 per cent. thicker than that of the flint glass.

If the thickness increases here to at least ½ *m.m.*, then both kinds of glass will approach toward each other in their absorption condition to a remarkable degree; but, after all, the crown glass is still the most transparent. Through a flint-glass portion of 1.2 *m. m.* in thickness I could still photograph lines to undulating length 309; the reduction to 0.6748 prolonged my spectrum only very little.

That less light is absorbed by crown glass than flint glass is nothing new, and for spectrum photography extensive advantages have been derived from this already. Formerly it was the general idea that a spectrum apparatus of glass would admit only a small portion of the ultra-violet rays of sunlight, and only since the French philosopher CORNU has demonstrated that, with glass lenses and prisms of the same material, the solar spectrum can be taken photographically to Fraunhofer line O, and with a refraction grating instead of a prism even to P and Q, the old way has been dropped entirely.

My experiments show clearly that the thickness of the glass is of great influence for the passage of ultra-violet light. I said to myself that, based upon my spark spectra, a prism of crown glass had to admit rays of any refrangibility, so long as the refractive edge was not mutilated, but sharp, and each refractive surface was optically plano and the light sufficiently strong.

Two prisms of crown glass, each of a refractive angle of 30°, and square-side planes of 36 *m. m.*, which corresponded with the before-mentioned conditions, I got from Reinfelder & Hertel, in Munich. The refractive edges are, indeed, absolutely sharp-edged, and the accuracy of the polished surfaces is so excellent that, by testing the same with a Gauss ocular on the collimator ¾ inch long, I could observe no focal difference on either of the four surfaces. Both prisms were made from the same kind of crown glass as my glass wedge.

With these prisms I made a number of views of the solar spectrum, first with one prism, and then with both. In the latter case I had fastened together both prisms with glycerine. The objectives consisted of simple plano-convex quartz lenses, and had a focal distance of ¾ and 2½ *m.*

The spectra so obtained reached to Fraunhofer line R. The lines were sharp to the end of the spectrum band, and the character of the ultra-violet line groups was excellently brought out. The somewhat larger absorption of the prism, consisting of two parts, could be observed, but it was even more insignificant than I had supposed. The lines of R required here more time, and remained even then lighter than by applying the single prism of 30°.

Beyond R none of these spectra extend. But having made the experiment in the beginning of April, it is not improbable that under a higher sun more might be attained. My quartz apparatus requires also a longer exposure in the spring, when I want to take those lines which are more refractive than R. If the greatest possible number of refractive rays is to pass through a sharp-edged prism, it is to be used principally when it is thinnest.

For this purpose the bundle of rays coming from the collimator is allowed to pass the refractive edge to about one-third of its diameter, so that this can be made use of as much as possible. Otherwise it may easily happen that this extends beyond the bundle of rays, and that the most valuable part of the refractive surface is lost for the view.

The crown-glass prism I then exchanged for one of flint glass of 60° and round surfaces of 49 *m. m.* diameter. This and the above-mentioned wedge were of the same material.

Although I had to renounce in this case the advantages of a sharp refractive edge, I reached with my views to line P. While my Steinheil spectrograph is suitable only for the photography of the spectrum to about N ½ O, I can take views of the solar spectrum with this flint prism pretty sharply to near P, and I have no doubt that I could have obtained more if my flint prism had been full-edged.—*Translated by H. D.*

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[*From the Photographische Wochenblatt*]

ABSORPTION OF ULTRA-VIOLET RAYS BY METALLIC MIRRORS.

No surface reflects the light so completely as that of polished silver, and as silvered mirrors can be produced easily, by coating polished glass with a fine metallic film or skin, according to Liebig's silvering method, such have been in use for a long number of years. This silvering method offers no difficulties to even those less practiced, at least as far as smaller mirrors are concerned; it is cheap, and can be renewed quickly at any time. The polished glass surface, although exposed for a short time during silvering to the influence of caustic alkalies, does not suffer in the least. Even a repeated operation on the same glass does not reduce the polish.

It is not necessary to first make photometric measures, to be convinced of the extreme power of reflection of a silver mirror. A look at such a mirror is sufficient to be convinced of its superiority.

I placed three plane mirrors, of speculum metal, hard steel and silvered glass, upon a white matt surface, and let the light of a lamp fall upon the same. The contrast was surprisingly strong. The reflection band of the silver surface was the lightest, against which the bands of the other two mirrors appeared gray, reflecting so much less light. This was by no means in consequence of differences in the polish; on the contrary, my silver mirror was in this respect behind the other two.

According to H. C. Vogel,* Potsdam, a silver mirror gives only a loss of light from 10 to 15°. Such an extremely favorable result connot be obtained with any other surface, and according to this the preference would have to be given to the silver mirror in all cases of reflection of light. This has been adhered to for a long time, indeed, and only somewhat later a weakness of the silver film was discovered, limiting the application of the silvered glass mirrors, and in some cases it was even made impossible.

Subjective impressions in the beginning governed too much the judgment of the reflective power of the silvered mirrors. The light reaching the retina of our eye is mostly only a part of that emitted by each source of light. If a ray of light is analyzed with the aid of a prism, etc., into its component parts, it will be found, when a correct test is made, that besides the so-called visible rays of red, yellow, blue and violet, others can be seen, laying on this side of the red or on the other side of the violet. This ultra-light, called ultra-red and ultra-violet, constitutes on an average by far the greatest part of the whole spectrum. Our eye is generally blind for this. The subjective impression which we receive from a ray of light has, therefore, a relative value only; thus, even if the light is analyzed into its component parts with the aid of a spectrum apparatus, it is never certain which rays are still effective outside of the visible spectrum.

The mirror value of a silver surface was formerly determined too much according to its reflective power for the optically light rays, for the red, yellow and particularly yellow-green, which make the strongest impression upon our eye. But, in regard to the reflection of the chemically more effective light, the blue-violet and the ultra-violet, then the faculty of the eye leaves us more or less behind. To this part of the analyzed light we have to clear the way to the retina. This can be done with the aid of fluorescence, but far better by the photographic plate, that "retina which never forgets," as so strikingly designated by Warren de la Rue. According to the state of our present knowledge, the light sensitive films of all our photographic plates are excited by all ultra-violet rays.* The photographic plate, above all the gelatine dry plate, is, therefore, more suitable for the discovery of the optical value of all substances which serve for the examination of the chemically most effective light, than any other means.

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* S. Zeitschrift für Instrumentenkunde, 1881, p. 50.

In optics there are generally used metallic mirrors, such as steel, speculum metal (from copper and tin, with a small addition of arsenic) and silver. With such I made my absorption experiments. Every mirror had a polished surface of 30 x 40 *m. m.* The former two were made at Julius Wanschaft's, Berlin; the glass plate for the latter at Reinfelder & Hertel's, in Munich.

My quartz spectrograph served to take the spectra of the reflected light. The mirrors in rotation were placed between the collimator (750 *m. m.*, focus D) and prism (of quartz, in two parts, after Cornu, 60°). Both were placed vertically to the collimator axis by means of a Gauss ocular, and the latter inclined as little as possible against the former. The prism was set for the rays λ 280 in the minimum of deviation, and left unchanged during the whole experiment. Of the unchanged position of the apparatus after each change of mirror, I convinced myself by the condition of that strong light line group of Mg., which lays at λ 280; it had to appear always in the same place on the focusing glass. The latter consisted of a strong fluorescent uranium glass plate, with a white scale upon a black ground. The quartz objective of the camera had a focal length of about 750 *m. m.*, and the position of the photographic plate was adjusted to its focal plane. With the plate and the objective axis forming an angle of 26°, I obtained a very even aperture. My plates, of 13 x 18 *c. m.*, had been prepared with bromo-iodized gelatine (5 K I : 100 K Br.), which I had cooked for an hour, and then digested for five hours with NH_3 (after Eder), at 34° C. I developed with oxalate of potassium, after Eder.

A Ruhmkhorf coil, for sparks 25 *c. m.* long, connected with seven Leyden jars, was put in action by six Grove elements (7.6 *c. c.* hydrogen in the minute). After the example of Messrs. Liveing and Dewar, I let the sparks, whose light I used, pass between iron electrodes. The iron spectrum is better than any other on account of its richness in lines, partly continuous in the ultra-violet, and replaces a continuous spectrum. The time of exposure was from 2½ to 20 minutes, the slit opening 0.100 *m. m.*

A plate embodies the results of the three mirrors for the time of the exposure, of 2½, 5 and 10 minutes. Only after having obtained with each mirror decided results, I photographed upon the before-mentioned plate three spectra for each. I could, therefore, accept that neither differences in the sensitiveness of my plates, nor in the developing, had made my results doubtful.

In accord with the tests made by Liveing and Dewar, I found that with the use of the silver mirror the rays of λ 335 to 307 will not come into action at all in the beginning, and only after continuous exposure will they come into action with difficulty. I could not discover any influence upon the more refractive lines; all three mirrors had rendered this part equally good. If the nine spectra of my plates are now compared, it can be perceived at once that the silver mirror, where it admits a passage of the rays, even under prolonged exposure, does not come up to the other two, and that it seems not to surpass them in any manner in the other parts of the ultra-violet. According to this, the application of the silver mirror is completely excluded regarding the full rendition of ultra-violet rays.

For all spectra which are to be free from absorption, mirrors of steel or speculum metal should be used only.

My glass plate I had silvered twice to obtain a heavier silver coating. But as also under these circumstances the metallic film remains extremely thin, and as thinner silvered glass mirrors should admit the passage of a little more ultra-violet than thicker ones, I had a heavy silver mirror made, several millimeters thick, and inserted this in the passage of rays of my quartz spectrograph. I hoped to reduce in this way the transparency of the mirror. But it proved unfortunate, *that the solid silver plate did not do more in regard to my views of the ultra-violet than the silvered glass mirror.*

From my observations it appears as if the photographic maximum of the spark spectra was far off from the end of the visible spectrum in the ultra-violet, and indeed partly there, where the absorption of the silver mirror can be observed. But in this case the value of the preceding result would be only a relative one.

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*I myself have photographed the spectrum of zinc to the end upon gelatino-bromide plates, that is to a length of 20,243, and that notwithstanding a portion of air 2 meters long which the spark light had to pass through on its way to the plate. In no place to the last zinc line (it was taken with the aid of a dioptric spectrograph) can I discover a reduced sensitiveness of the plate.

This circumstance caused me to repeat the experiment, but I did not use the electric spark this time for lighting up the slit, but the magnesium light. It is also rich in ultra-violet rays, and gives a pretty continuous spectrum, at least in that spectral district which was of interest to me in this case.

The unavoidable motions of the magnesium light I removed by suitable composition of my spectrograph. Analogous to the spark experiment, I exposed also here in different lengths of time. For each of the four mirrors I burned in rotation 62½, 125 and 225 *m. m.* of magnesium ribbon.

The absorption spectra so obtained threw quite another light upon the value of my silver mirror. To the undulating length, 335, both spectra had appeared in complete strength ; beyond that, hardly any action was perceptible. Only at λ 285 the strong light line was observable, which is always obtained sharp and reversible as soon as the magnesium is burned in the air. The mirrors of steel or speculum metal, in comparison, had rays reflected to about the width of both cadmium lines, Nos. 17 and 18. Their spectra diminished to this place uniformly, and differed in no manner from a view which I made with a quartz prism.

According to this, I could accept that steel as well as speculum metal gives not only much more suitable reflectors for ultra-violet than silver, but that they meet also all optical requirements ; and that, on the other hand, a silver mirror absorbs more rays of the ex-prismatic spectrum than I had to accept after the views of the iron spectra. This latter circumstance would be felt in a very disagreeable manner by application of weaker light sources, to which the magnesium light, as is known, does in no way belong.

Everywhere where the reflection of ultra-violet rays is concerned, and where particularly a reflector is required which has to be free from all partial absorption, the silver mirror is decidedly to be rejected. For smaller dimensions, the steel in hardened condition is excellently suitable, as well as the speculum metal ; for larger ones, nothing remains but the latter. The production of large steel mirrors has insurmountable difficulties. Steel, even of the best qualities, is never homogeneous. In its hard surface there will appear softer places, even if they resemble only very small dots. But as soon as soft surfaces alternate with hard ones in such mirrors, they reflect the light irregularly. The hard steel only, and particularly the one called "glass hard," is subject to such an excellent polish. To the heterogeneousness is to be added, further, the difficulty of hardening, to which so many objects from steel, as soon as they reach a large dimension, are sacrificed. The hardness finally gives to the grinding and polishing extreme difficulties, and adds not immaterially to the increase in price of such mirrors.

In my views of the solar spectrum with glass prisms, I disregarded in the beginning the absorption of my heliostat mirror, which has a silvered surface, because the glass body of the prisms absorbs the less refractive rays, which the silver should still reflect completely. I have repeatedly convinced myself of the limited correctness of this general acceptance, when taking the solar spectrum to the Frauenhofer line R with crown-glass prisms. But even in this case I had to resort to the steel mirror if I was to make complete use of the transparency of the glass.

The silver mirror, it is true, does not retain the rays from λ 335 to 307 and beyond ; if exposed sufficiently long, even these will commence to act ; with one reflection and *sufficient illumination*, success can still be calculated upon ; but the application of two silver mirrors has always left me in the dark. My spectra always cut off pretty sharply with the Frauenhofer line P, and when effecting the second reflection, by steel or speculum metal, my spectrum commenced to grow.

Translated by H. D.

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[*From Photographische Wochenblatt.*]

SCHUMANN'S LATEST VIEWS OF THE SOLAR SPECTRUM.

V. SCHUMANN writes to the *Photographische Wochenblatt :*

To show you that my instruments are also able to accomplish something graphically, I take the liberty to send you two different views of the ultra-violet of the solar spectrum. Plate No. 386 *a* D, has been taken with a *single quartz prism.* Camera and collimator were of the same length (2,500 focus D Frauenhofer line), and as the negative will speak for itself, it may not be necessary to refer to the softness of this spectrum. Only one thing I would still like to mention. *This picture unites, so to speak, the total result of my last year's labors mechanically, photo-chemically and optically.* If I was to sum up the main points, requiring particular consideration in photographing the spectrum picture of invisible rays at such inferior disposition, it would be done in the following way :

1. Excellent slit (sharp cuts).
2. Long collimator.
3. Camera just as long—*not longer.*
4. Camera revolving, for the inclination of the plate toward the objective axis.
5. Objectives of quartz, plano-convex lenses.
6. One prism of faultless quartz, in two parts, left and right-handed, fastened together with glycerine. *The refractive surfaces of the highest accuracy.* Mounting of the prism with the greatest care.
7. If a mirror is required, one of speculum metal or steel should be used. A silver mirror is useless, provided the exposure shall not be of unusually long duration.
8. Bromo-gelatine containing iodide of silver, cooking and afterward digesting with NH_3, after Eder. AgI and AgBr about 5:100, prepared together and colored a little with alkaline cyanin before watering. Entirely uniform drying.
8. Sufficiently long exposure. Developing only with potassium developer (after Stolze). but not without addition of KBr. Pyro, moderately; potassium in good quantity; also sulphite of soda. Development not to be extended too long. All these points have to be observed, if the result of a view of the solar spectrum in the exprismatic part shall give satisfaction.

One more thing. For a long while I did not care about the choice of the developer in regard to the development of a solar spectrum. Look at the inclosed plate, which I developed with oxalate of potassium, and then compare it with the other, 368 *a* D. What contrast! What richness in tone, from the clearest white to the most intense black in the potassium plate, and how monotonous the other negative developed with iron. The cyanin, which was added to every plate, contributes of course to some extent to the greater clearness, but for the largest part this brilliancy without hardness results from the potash developer. I have to say that none of the many developers which I tried resembles the potash developer as regards the photography of the *solar spectrum.*

But the potassium developer has also its weak side. Not that I ever observed the frilling spoken of by H. W. Vogel and others, not even when I cooked my emulsion for two hours, and digested for ten hours with strong ammonia at 35° C. These almost forgotten miseries of the modern dry plate process do not trouble me in the application of potassium in the pyro developer. But I might complain about the coloration of the gelatine coating, which shows too quickly in freshly dissolved pyrogallic acid if the development is forced. The whole plate then becomes somewhat brownish, and obtains an impure appearance. This can be prevented by longer development and application of a less energetic developer. This advantage has to be renounced when the use of the full developing power becomes necessary.

The difference between the spectrum developed with oxalate and that developed with potassium is undoubtedly so great, that the impression cannot be avoided of the former one not being sharp. But even under this supposition, which is not the case, the potassium developer would have given a good many times more brilliant and, so to speak, more plastic pictures. Schumann ascribes again the principal merit to the potassium developer, and not to the cyanin, which is in the emulsion, and this may be so far correct as, by the use of the oxalate developer for cyanin plates, a similar brilliancy does not occur. Still we would not like to have the part of the cyanin underestimated, and it does appear to us as if this combination would also impart in other cases, where views taken in sunlight are in question, extreme advantages in regard to brilliancy and high lights. The high-color sensitiveness of the plates is, of course, here always an obstructing hindrance. But, as in the alkaline development, the cyanin always disappears quickly from the film, this hindrance could be subdued. That here also, with a suitable yellow dark-room light of proper color, better results can be obtained than with a red one, the plates being less sensitive to a yellow, closely related to orange, than for the red nearest to this; and this yellow, having a much more intense effect upon the eye than the red color, would, according to our view, not be necessary to exclude. Experiments in this direction would be very desirable.

Translated by H. D.

[*From New York Times.*]

PHOTOGRAPHS ON THE WING.

"THERE'S more fun in it than in a nigger minstrel show, and there's ten times the variety." The speaker was a well-known Wall-street broker and an enthusiastic amateur photographer, while the "it" referred to was a new style of photographic camera, of the class known as detective cameras, so called because they can be carried under the arm or in the hand, and used without the knowledge of the subject. This gentleman has a large album, or rather scrap-book, full of pictures—several hundred iu number—made by him, and comprising street scenes about New York and other cities, scenes about the river front and on the harbor, scenes pathetic, scenes comical, scenes picturesque, and scenes that no adjective will describe. Perhaps the most interesting are those taken on the river front. The greatest charm of the pictures lies in the fact that the subjects were evidently totally unconscious that they were being photographed.

"Now, when I say instantaneous," said the broker to a *Times* reporter, "I do not mean it in the sense used by portrait photographers. In a gallery it is very unusual for even the so-called instantaneous operators to make a picture in less than a second. Compared with the old methods a second may be called instantaneous, but when I use the term, I mean that they were taken within a space of time ranging from a twentieth to a sixtieth part of a second."

"That is certainly very fast work, but I am sure that I have read of photographs made in the five-hundredth part of a second," remarked the reporter.

"I have no doubt of it," was the reply, "but it's stuff and nonsense—all of it. D. Laudy, of the School of Mines, has recently shown how utterly ridiculous it is to make such a claim. Mind, I do not say an impression cannot be made on a sensitive plate in much less time than the sixtieth of a second, but to make a picture—it's impossible. No more truth in it than in that ridiculous yarn about the picture of a thief being made while the photographer was focusing on the ground glass of his camera preparatory to photographing the lady whose watch the thief was represented as stealing, and the utter absurdity of which was shown in the *Times* a short time ago.

Accordingly, after filling up the "holders" with the sensitive plates on which the impressions are made, the broker started on his trip with the reporter in tow. The ball was opened with a shot at a group of Germans on the elevated railway platform at one-hundred and fifty-fifth street; then, following the riverside, the broker took a few views of boats on the Harlem and a rather pretty group of children. But these did not satisfy him, so, leaving the river edge, he struck out through the woods which cover the west bank, assuring the reporter that he was "bound to strike something good before he had gone far," which prediction was speedily fulfilled. About half way between the Atalanta Casino and the bridge, the couple stumbled upon a party of tramps—two men and one woman—lying in elegant unconcern on the grass by the pathway. The trees, in the shade of which they had stopped, no longer screened them from the sun, which now shone on them with its full glare. Fast asleep they lay, in positions that might lead one to believe they had been unceremoniously dropped from a balloon. An empty bottle in the relaxed grasp of one of their number betrayed the cause of their deep slumber.

"Bee-utiful!" exclaimed the amateur. Then placing himself in an advantageous position, and holding the camera (which was much the shape of a cigar box) in one hand, twisting a screw here and putting a button there, he cautioned the reporter to "look-out," and suddenly gave vent to a howl or screech which a robust Indian might envy. The sleepers were awakened by the noise and sat bolt upright, mouths and eyes wide open, and their faces expressive of fear and amazement. They presented as grotesque a picture as one often sees, and in this position their pictures now adorn the album of the enthusiastic amateur. "But," ventured the reporter, fearing that if his guide indulged in too much of this kind of enthusiasm it might lead to serious results, "suppose they should show fight?"

"Oh, I would point you out as the offender and quietly decamp."

From which the conclusion may be drawn that for solidified coolness a combination of a Wall-street broker and an enthusiastic amateur photographer leads the world. The enthusiastic amateur was thereafter carefully watched by the scribe. Upon approaching one of the numerous beer gardens which adorn the country in that region, loud voices were heard in angry dispute. The amateur stopped to listen a moment, and then broke into a quick run, exclaiming, "Hurry, hurry! I haven't a first-class slugging match in my whole collection, and I wouldn't miss this one for worlds. What was that he said? Didn't he call him a liar then?"

But whether he did or not, when the place was finally reached, the antagonists had been separated, and were gradually cooling down. "Now, that's what I call a downright shame," gasped the broker, as all out of breath he fell into a convenient chair, disappointment and disgust depicted in every line of his features. "They are a couple of cowardly poltroons. It's enough to make a man believe that there is no manhood left in the human race. He certainly called him a liar, too. Oh, I say" —his face lighting up with renewed hope— "won't you"—meaning the reporter—"just go over there and insult that big Irishman? Call him a thief or a pickpocket—anything to get him mad. It will all be over in a few moments, and I will see that you are properly cared for."

As the writer was a member of a mutual

benefit association and a decent burial was already guaranteed him, he did not consider the offer a sufficient inducement, and so respectfully but firmly declined to comply with the request. This episode seemed rather to damp the enthusiast's ardor, and as he wended his way toward the bridge he conversed only in monosyllables, occasionally cursing his luck and the cowardice of "some men." Some exquisite little bits of scenery, however, which were duly photographed, somewhat restored his equanimity.

Just south of the bridge another amateur, with a camera and tripod, which did not attempt to conceal their identity, was in the act of photographing a group of peanut and taffy peddlers. "While there may be honor among thieves, there is none among photographers," remarked the broker amateur, as he took a shot at his brother amateur, standing with his head under the focusing cloth and legs spread out like an immense inverted V, the whole reminding one of the frightened ostrich as it is depicted in old readers.

The next picture made came very near being the cause of a tragedy. As the couple were crossing the bridge, the broker called his companion's attention to a man approaching them, saying: "If that man is not a jail-bird I miss my guess. I'll just take a shot at him." No sooner said than done, but just as the broker was passing him the man stopped suddenly, and, barring his further progress, growled rather than said: "Look a' ere, young feller, unless I'm mistooken ye've got one o' dem detective cameras in yer han', an' I jes' want ter soy ef ye've bin a'makin' a photo o' my phiz I want yer ter break it up right 'ere." The broker hesitated, undecided what to do. "Come now, open her up an' bring out dat picter. If yer don't, do yer know what I'll do wid yer. I'll take yer by de scruff o' de neck an' drop yer right over inter de river." There was nothing to do but open the instrument and hand over the plate, on which, however, no image as yet appeared.

The ruffian eyed the plate intently a moment, and then, turning to the amateur again, said: "See here, me covey, a little 'o dis goes a good way." Then grasping the amateur by the collar he pulled him over to the railing. "Now projuce the picter or over yer goes."

The amateur, who up to this time had seemed to be impressed only with the ludicrous side of the situation, seeing that unless he quickly placated his assailant he might be in danger of bodily harm, hastened to explain enough of the mysteries of the science to satisfy his assailant that it was impossible to make a picture till certain chemicals had been used on the plate. The rough was only half convinced, but refrained from offering further violence, apparently from fear of exposing his ignorance on the subject. "Well, I'll let yer off dis time, but mind now, I'm givin' yer a straight tip—don't yer never try it again, or I'll thump de wind out yer."

"Poor fool," ejaculated the amateur, as the ruffian strode away, "he thinks he has succeeded in spoiling his picture, while I have it right here, and it will add one to the collection in the Rogues' Gallery if I ever live to develop it. The plate I gave him was a blank one."

A few instantaneous views of the river taken from the bridge completed the list, making in all eighteen different pictures, all interesting and some remarkably unique. "Not a very good day's work, either," the broker remarked.

Subsequent inquiry showed that not less than 200 cameras of this description are in use in New York City alone, so that it behooves every man, woman and child to walk circumspectly while on the streets, for it is impossible to tell when they may be confronted with a photograph showing them in some ridiculous or embarrassing position.

Patents.

ENGLISH.

Applications.

7,411. James Henry Steward, 406 Strand, London, for "Stops or diaphragms for photographic lenses, and projection apparatus, and instantaneous shutters."—Dated 18th June, 1885.

7,422. Charles Wells, 22 Southampton Buildings, W.C., for "A method of recording by photography the degree of accuracy in aiming ordnance."—*Complete Specification.*—Dated 18th June, 1885.

7,488. Alfred Julius Boult, 323 High Holborn, Middlesex, for "Improvements in the manufacture of sensitive films, plates or tissues for photographic purposes." (George Eastman and William Hall Walker, United States.)—Dated 18th June, 1885.

7,682. George Bernard Seibert, Suffolk House, Cannon street, London, for "A new or improved frame for photographic sensitive plates."—Dated 24th June, 1885.

7,720. Thomas Arthur Moryson, 115 St. Vincent street, Glasgow, for "Improvements in photographic printing."—Dated 25th June, 1885.

7,664. Fredric James Egerton Hine, 4 and 5 Arcade Chambers, Birmingham, for "Improvements in picture frames."—Dated 26th June, 1885.

7,828. William Joseph Butler Humphreys, 186 Fleet street, London, E.C., for "Improvements in photographic shutters."—Dated 27th June, 1885.

8,148. Josiah Pumphrey, 160 Angelina street, Birmingham, for "Improvements in photographic and signal lamps."—Dated 6th July, 1885.

8,313. John Bailey Holroyd, Crossley street, Halifax, for "Improvements in camera slides, dispensing with the use of glass plates, and in substitution thereof."—Dated 9th July, 1885.

8,381. John Montgomery Charles Grove, Letterkenny, Ireland, for "An improved device for supporting, raising, lowering, leveling and directing photographic cameras, and for other purposes."—Dated 11th July, 1885.

8,367. Frank Bishop, 53 Chancery lane, London, for "An improved stand for exhibiting photographic and other pictures, and show and other cards." (J. F. Knipp & Co., Germany.)—Dated 10th July, 1885.

8,514. Charles Day Durnford, 186 Fleet street, London, E.C., for "Improvements in photographic shutters."—Dated 14th July, 1885.

8,722. Samuel Dunseith McKellen, 18 Brown street, Manchester, for "An improved method of exposing sensitive paper, tissue, or films."—Dated 20th July, 1885.

8,917. Benjamin Joseph Edwards, Hackney, Middlesex, for "A new or improved apparatus for coating photographic plates or paper."—Dated 23d July, 1885.

8,938. Charles Day Durnford, 1 Castle terrace, Edinburgh, for "Improvements in photographic printing apparatus."—Dated 24th July, 1885.

8,971. William James Lancaster, 6 Livery street, Birmingham, for "A new or improved folding lamp for photographic work and for other purposes."—Dated 25th July, 1885.

9,091. Henry Bassano Hare, Great Elm Rectory, Somersetshire, for "Improvements in single and double dark slides for photographic purposes."—Dated 29th July, 1885.

9,114. James John Walker, 127 Long Acre, London, for "Improvements in photographic cameras."—Dated 29th July, 1885.

9,247. Hezekiah Nelson Heffner, 101 Adelaide road, Haverstock Hill, Middlesex, for "An improved method of obtaining light, and an apparatus for conveniently and effectively producing the same, which improvements are specially adapted for photographic and other purposes."—Dated 1st August, 1885.

9,255. Benjamin Constant Le Moussu, 28 Southampton buildings, Chancery lane, London, W.C., for "An improvement in photography."—Dated 1st August, 1885.

9,286. William Thomas Morgan and Robert Leamon Kidd, Richmond, Surrey, for "A roller camera slide or carrier for use in producing photographic negatives on paper or any flexible support in rolls or lengths."—Dated 4th August, 1885.

9,288. Ernest Edward Pickard, Brockley, Kent, for "Improvements in apparatus for carrying and exposing photographic dry plates."—Dated 4th August, 1885.

9,505. George Lowden, 65 Reform street, Dundee, for "Shutter for photographic lenses."—Dated 10th August, 1885.

9,575. Walter Bentley Woodbury and Felix Vergara, 35 Chancery lane, London, W.C., for "An improved substitute for glass to be used for photographic and other purposes. —Dated 11th August, 1885.

9,623. Alfred Charles Farnsworth, 1 St. James' square, Manchester, for "Improvements in actinometers for photographic and other uses."—Dated 13th August, 1885.

9,661. James Yate Johnson, 47 Lincoln's Inn Fields, Middlesex, for "Improvements in photographic apparatus for enabling prepared plates to be readily placed in and removed from the photographic camera without injurious exposure to light." (F. H. Mader, Germany.)—Dated 13th August, 1885.

9,770. S. D. McKellen, 18 Brown street, Manchester, for "Improvements in camera metal fittings."—Dated 18th August, 1885.

9,999. Henry Charles Braun, 119 High road, Kilburn, London, N.W., for "A portable stand for cameras and other apparatus."—Dated 22d August, 1856.

10,205. Ernest De Pas, 68 Fleet street, London, for "An instrument for examining the internal organs of the human or animal body, and for photographing the same." (Boisseau du Rocher, France.)—Dated 28th August, 1885.

Specifications Published.

10,033. William Henry Richards and William Dyke Wilkin, 27B Great Hampton street, Birmingham, for "An improved portrait holder."—Dated 11th July, 1884.

5,725. Alfred Julius Boult, 323 High Holborn, Middlesex, for "Improvements in photographic film holders." (A communication from George Eastman and William Hall Walker, of Rochester, New York, United States.)—Dated 9th May, 1885.

2,851. John Bell, photographic artist, 49 Catherine street, Frome, Somerset, for "Adjustable back to chair for photographic or other uses."—Dated 28th April, 1885.

15,887. William Middlemiss, Holmefield Mill, Bradford, Yorkshire, for "Improvements in photographic cameras."—Dated May 14, 1885.

6,359. Benjamin Constant Le Moussu, 94 Boston street, Manchester, for "An improved process for producing plates for surface printing."—Dated 23d May, 1885.

6,368. James Robertson and Douglass Robertson, 109 K nmure street, East Pollokshields, Renfrew, for "An improved mode of obtaining photographic negatives or positives, and apparatus therefor."—Dated 23d May, 1885.

5,523. Eugen Himly, Berlin, Germany, for "Improved method of and apparatus for taking photographs by artificial light."—Dated 5th May, 1885.

11,212. John Veda Robinson, 39 Lower Sackville street, Dublin, for "Photographic cameras."—Dated 4th June, 1885.

12,329. Joseph Lyons, 230 Whitechapel road, Middlesex, for "Improvements in stereoscopes, and in combining a lamp therewith."—*Provisional Specification.*—Dated 12th September, 1884.

12,772. Fox Shew, 88 Newman street, Oxford street, Middlesex, for "Improvements in means for increasing the usefulness of photographic cameras."—*Provisional Specification.* Dated 24th September, 1884.

13,156. James William Thomas Cadett, 84 Grove lane, Camberwell, Surrey, for "New or improved arrangements applicable to photographic shutters whereby the duration of exposure can be varied."—Dated 13th October, 1884.

12,855. William Watts, of Norman Villa, Withington, Lancaster, for "Improvements in camera tripods or supports."—Dated 27th September, 1884.

13,318. James Thomson, 21 High Park street, Liverpool, for "Improvements in photographic cameras."—Dated 7th July, 1885.

13,596. Alfred Julius Boult, 323 High Holborn, Middlesex, for "Gelatine plates, films, or tissues for use in photography, and process of manufacturing and using the same." (A communication from George Eastman and William Hall Walker, Rochester, New York, United States.)—Dated 14th July, 1885.

7,422. Charles Wells, 18 Walker terrace, Plymouth, Devon, for "A method of recording by photography the degree of accuracy in aiming ordnance."—Dated 18th June, 1885.

3,581. Alfred Peter Sharp, 17 Great Brunswick street, Dublin, for "A photographic dark slide for negatives on paper."—Dated 15th July, 1885.

14,951. Lewis Wright, Hornsey Rise, Middlesex, and Herbert Charles Newton, 3 Fleet street, London, E.C., for "Improvements in oxy-hydrogen and other lantern microscopes."—Dated 3d July, 1884.

AMERICAN.

319,975. "Photographic printing apparatus." W. Hill and T. R. Wilson, Salt Lake City, Utah. Filed July 15, 1884. Issued June 16, 1885.

321,244. "Producing photo-relievos." L. H. Philipi, Hamburg, Germany. Filed January 8, 1883. Issued June 16, 1885.

321,139. "Photographic camera," Thomas Samuels, Hadley Monken, England. Filed September 8, 1884. Issued June 30, 1885.

322,111. "Photograph exhibitor," Edward Kürschner, Silesia, Germany. Filed February 8, 1884. Issued July 14, 1885.

322,721. "Photographic washing apparatus." H. W. Oliver, Rome, N. Y. Filed May 10, 1884. Issued August 4, 1885.

324,489. "Photographic camera." Francois Roussel, Rhone, France. Filed June 5, 1885. Issued August 18, 1885.

326,185. "Photographer's chair," Otis C. White, Worcester, Mass. Filed April 20, 1885. Issued September 15, 1885.

326,921. "Photographic plate holder." Stearne Russell, Waterbury, Conn. Filed April 20, 1885. Issued September 22, 1885.

◆

JULY 3, 1885.

DEAR SIR,—Inclosed find postal note for $2, for which please send me the BULLETIN for one year. I have just started in business, and it would be impossible for me to continue without the BULLETIN. I have been a reader of it for nine years, and hope to be for nine more.

Yours respectfully,
W. L. BROSEE.

What Our Friends Would Like to Know.

N. B.— We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—G. A. P. writes :—Can you tell me how you get that high gloss on the photos you use to illustrate the BULLETIN with?

A.—A high gloss, such as appears upon the photographs that illustrate the BULLETIN, may be obtained by using a burnisher—Entrekin's for example—the surface of the mounted print being first rubbed with some kind of lubricant, Castile soap answers very well.

Q.—J. L. A. writes :—Please give me the time of exposure with the different stops for the Dallmeyer rapid lens if I use the Stanley plates on an ordinary bright day, both in direct sunlight and in shadow.

A.—The apertures of all stops or diaphragms supplied with Dallmeyer's lenses (portraits, views and landscapes) are so arranged that, counting from the *largest* to the next size *smaller*, the time of exposure is *doubled.* Stops marked × are exceptions to this rule, and require an exposure only *half as long* again as the *preceding larger* stop. From this rule you can calculate the value of each of your stops. Our experience has been that about $\frac{1}{100}$ of a second is right for bright sunlight and about $\frac{1}{64}$ for shadow, with lens wide open and upon Stanley plates.

Q.—G. L. L. writes :—I would like to know the best way to get the silver out of old hypo fixing baths, after using them for dry plates.

A.—Add solution of potassium sulphide to the bath. This will precipitate silver sulphide, which is allowed to settle, the upper clear portion poured off, water is added, allowed to settle again, and then poured off close. The silver sulphide is then dried and roasted in a crucible at a red heat, the sulphur goes off and the silver remains.

Q.—J. H. K. writes :—I have had to make several interiors lately, with the light coming into the windows facing the lens, as seen in the print inclosed. You will see there is a kind of haze all round the window from over-exposure. I wish to know if there is any way of developing or handling the plate by which this can be overcome, there being no other source from which to obtain the light?

A.—Try covering the windows with some thin white paper to diffuse the light, and paste a piece of black paper on the back of your plate during exposure.

Views Caught with the Drop Shutter.

MESSRS. MULLETT BROS. have just completed a very handsome building in Kansas City, Mo., to be devoted to the storage and sale of photographic materials and apparatus. The structure is five stories high, one hundred and twenty-four feet deep and twenty-five feet wide. It is built on the site of their old store, and is fitted with all modern conveniences. The first floor is devoted to offices and the general stock of photo materials. The second floor will be an immense sample room, where one can find every conceivable article known to photography, as well as picture frames, moldings, mirrors, etc. This enterprising firm will carry as large and as complete a stock of photographic materials as any house west of New York City, and photographers of that section will have no trouble in obtaining anything they may require, which includes all materials and apparatus manufactured by our publishers.

MESSRS. STRONG AND WALKER, of the Eastman Dry Plate and Film Company, returned from Europe on the City of Chicago, September 25, 1885. Mr. Walker looks much improved in health from his trip, and will shortly return to Europe again.

A. L. Blanks has opened a new studio at 279 Main street, Memphis, Tenn. If his work is as tasteful as his card of invitation, his success is assured.

We hear the celebrated interference proceeding in the U. S. Patent Office, Kuhn *vs.* Hulbert, has just been finally decided in favor of Kuhn, the Board of Examiners-in-Chief, and also the Commissioner in person, having awarded him the priority.

Mr. E. K. Hough will leave Manistique, Mich., for the South. We are glad to hear some excellent reports of him. He has captured some fine views and some handsome portraits during his stay in that section. His artistic tastes have long been known to us.

Mr. Francis Hendricks, of Syracuse, seems to have an extensive business in photographic stock, judging from the accounts we hear of him. He issues a catalogue of 275 pages, and employs two traveling salesmen. His large store is devoted to artists' supplies and photographic goods. We wish him every success.

WEISKOPF-LILIENTHAL.

The Rev. Rockwood McQuestion last evening united in marriage Miss Emma Weiskopf, of Minneapolis (formerly of Winona), to Theodore Lilienthal, of New Orleans, the ceremony being performed at the residence of the bride's sister, Mrs. Robert Waldon.—*The Minneapolis Tribune, September 23.*

We understand from Mr. W. Irving Adams that Mr. J. Traill Taylor has not resigned his position as editor of the *Photographic Times;* therefore our notice in last Bulletin was rather premature.

We saw Mr. J. Traill Taylor depart for Glasgow last Saturday on the steamship Furnessia. He was in good health and spirits, and we wished him a safe and pleasant voyage. His many friends in the United States will regret his departure.

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ADVERTISING RATES.

	1 Issue.	2 Issues.	6 Issues.	12 Issues.	24 Issues.
1 Page....	$15.0	$24.00	$65.00	$120.00	$216.00
½ "	8.00	13.00	33.00	62.00	110.00
¼ "	5.0	7.50	18.50	32.00	56.00
⅛ "	3.00	5.00	10.00	17.00	30.00

Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

MADE BY AN AMATEUR,

WITH ANTHONY'S DETECTIVE CAMERA.

PRINTED BY HUGH O'NEIL.

ON ANTHONY'S READY SENSITIZED
EXTRA BRILLIANT ALBUMEN PAPER.

For Description See Page XVII.

ANTHONY'S
Photographic Bulletin.
PUBLISHED SEMI-MONTHLY,
Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

(Copyright, 1885, by E. & H. T. ANTHONY & Co.)

Vol. XVI. SATURDAY, OCTOBER 24, 1885. No. 20.

PRINTING AND TONING.

We have had so many inquiries lately from our correspondents about printing and toning upon albumen paper, that we are led to believe that some discussion of the subject may prove useful and instructive We do not expect to impart any novel methods of procedure, but rather to give a *resume* of the subject for the benefit of our less informed readers.

There are two ways in which to begin operating. One is upon albumen paper already prepared (ready sensitized), and the other upon the same paper that has not been so prepared. Since the ready-sensitized paper is now very largely used by both professional and amateur photographers, we will indicate the course to be pursued with it first. Having a good negative and printing frame, the first thing that needs attention is that the paper to be used in printing and the pad of the printing frame are in the same condition in the matter of moisture. If the pad happens to be damp and the paper dry, the latter will contract and move slightly when the two are pressed together in the printing frame, owing to the absorption of moisture. The result of this will be a print lacking in sharpness, no matter how perfect and sharp the negative may be. The paper is now exposed for twenty minutes or longer to the fumes of ammonia. This is done by placing the sheets, cut to size, around the sides of a box containing a dish of strong ammonia solution and having a tight-fitting lid. Care must be taken that the ammonia is perfectly free from sulphur. If it is not, the paper will acquire a disagreeable yellow color, and the prints obtained will not be brilliant in the white parts. This is not an unnecessary caution, for we have lately gone through just such an experience. Do not fume more paper than you wish to use at once. If more is thus fumed, it will become yellow and not give brilliant prints. Above we have named twenty minutes as the time of fuming. This is the shortest time needed, and anything longer up to one and a half hours does not cause any trouble in the printing. Within the above limit we have seen some excellent work with long fuming, and the more time spent in this stage of the operations the quicker the prints are obtained afterwards. In warm weather the dish containing the ammonia becomes very cold, from the rapid evaporation at first, and then refuses to give off fumes enough to act upon the paper. In this case, warm the dish before placing it in the box and adding the ammonia solution.

The paper is now placed in the printing frame (face down upon the film side of the negative) and the back of the frame, with its pad, tightly and evenly pressed into place by the springs attached. The frame is now exposed to sunlight, and whether directly to the sun's rays, or to the light of the sky obtained in the shade, depends upon the character of the negative used. If the negative is dense, and uniformly so, it may be exposed in direct sunlight; but if the negative is thin, expose in the shade. And here we must add a word about the point to be attained in printing. Examine the print from time to time to see if the color is deep enough. Remember that the succeeding operations of toning and fixing will reduce the depth of the print very considerably—far more than we can indicate in words. A little practice will give a correct judgment for this point. Perhaps a good point to use as a guide is to leave the print in the light until the faintest parts are decidedly sharper than you need them in the finished picture; this allows for the reduction incident to toning and fixing afterwards. At first it will be necessary to examine the prints occasionally to note the progress of the work; but after a little practice these examinations will be very few. As the print is examined by opening one part of the back of the printing frame, there is danger of moving the paper during the operation, and this risk should be reduced to the least possible.

Having obtained satisfactory prints of good depth of color, and trimmed them, the next step is the toning. In order that the best effects may be obtained, the prints are first placed in a dish of water and allowed to soak thoroughly. This water sometimes has an addition of some chemical to change the color of the prints preparatory to toning. It is also extremely important that the water should be pure, and, more particularly, free from chlorides. Clean filtered rain water is generally pure enough. To ascertain if a water contains chloride, add a few drops of nitrate of silver solution to it in a clear glass. If much chloride is present, it will become milky—a slight turbidity is of no importance. In regard to the addition to the water used to wash the prints preparatory to toning, the character of this will depend upon the color of the tone desired finally. If black tones are desired, clean water, without any addition of chemicals, and an alkaline bicarbonate toning bath, is the best method of procedure. If, on the other hand, you desire a reddish-brown tone (best suited to landscape prints), add citrate of soda or acetic acid to the wash-water above mentioned. We have used both citrate and acetic acid, and as the results obtained are about the same, we prefer the latter, as it is readily obtained and does not spoil in keeping. The water should be made decidedly acid to blue litmus paper by the addition of acetic acid. By thus proceeding, red-brown prints are obtained, which are washed in another change of water. In either case, whether a chemical is used or not, the prints should be washed in two changes of water to eliminate the silver nitrate. It is not well to wash too much, as the presence of a trace of free nitrate of silver appears to facilitate toning. The prints are now ready for the toning bath.

Since the color of the finished prints depends upon the character of the toning bath used, we will give several formulæ for preparing it. In all cases make a solution of gold chloride of one grain of the dry salt and five grains of sodium chloride to one ounce of water.

FOR BLACK TONES.

Take

Gold solution	1 ounce.
Saturated solution of sodium bicarbonate	1 ounce.
Water	6 ounces.

Mix twenty-four hours before needed and use at about blood heat.

FOR RED-BROWN TONES.

Take

Gold solution	1 ounce.
Acetate of soda	40 grains.
Water	6 ounces.

Mix with warm water and allow to stand a short time.

The above formulæ will give the tones named. If a rich purple tone is desired, a combination method may be used. For this purpose make the prints red in an acetic acid bath, as mentioned above; wash, and then tone in the bath for black tones; this will give a rich purple tone of a very pleasing character under suitable circumstances.

Having decided what color is most suitable for the prints you wish to make, proceed in accordance with the above directions. Place the prints in the toning bath in a flat dish, a few at a time, and have the dish in such a position that subdued daylight shows the various changes of color that take place. It is almost impossible to do this work by gas or candle-light, more especially for beginners. We have toned prints by gas-light, but cannot recommend it. If the bath is warm, and a few prints at a time are worked, the short exposure to subdued daylight does them no harm. Carefully watch the changes of color that the print undergoes, and remember that overtoning gives a blue shade, and the prints look dead and flat.

When the correct tone is obtained, throw the prints into some clean water, and then fix them in clean hyposulphite solution of about one ounce in eight ounces of water. Finally wash thoroughly in five or six changes of water.

We have given above the method followed in using ready sensitized paper. There is no difference in the operations followed when unsensitized paper is taken as the starting point and after the latter is sensitized. To sensitize plain albumen paper it is simply floated from three to five minutes upon a bath of silver nitrate, containing from thirty-five to fifty grains to the ounce. After draining and drying, the operations of fuming, toning, and fixing are proceeded with as detailed above. Freshly sensitized paper gives better black tones than ready sensitized in our hands.

We have thus endeavored to make clear the operations of printing and toning, and while we do not claim to have imparted anything new, yet we believe that our discussion of the subject will prove useful to our readers.

THE PERFECT PAPER NEGATIVE.

THE independent discoveries of Roche, in America, and of Warnerke, in England, appear to be the culmination of the long and anxious search for the perfect paper negative of which Talbot dreamed, but never lived to see.

Coating the paper on both sides with the gelatine bromide emulsion completely nullifies the grain, and soon for most purposes the use of glass will be superseded.

Mr. Roche invented this process in 1884, and applied for a patent, which has been duly issued.

Singularly enough, Mr. Warnerke accidentally hit upon the same thing in the latter part of February, 1885, and has obtained a patent in England.

This marks a great step forward in the fascinating art of photography.

We understand that machinery is being constructed for the manufacture of the Roche patent negative paper, and as soon as it is ready to be put upon the market our readers will be promptly advised.

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EDITORIAL NOTES.

THE effect of amateur photography upon the professionals is markedly what the late Mr. Henry T. Anthony prophesied some years ago it would be. Not altogether is the increase of large work due to the increased facilities for making this style of picture. Live men are beginning to see that whatever of rivalry there may be between the amateur and professional, ceases when large work is done. Very few amateurs ever attempt anything above 8 x 10. The great number of large cameras and lenses sold within the last six months bear testimony to this.

MANY galleries that, till now, have never done any work above 8 x 10, are now fitting up for pictures as large as 20 x 24. With the advance in general favor of the paper negative, this tendency will undoubtedly increase. The cabinet picture will, probably, like the poor, be ever with us; but the time is near when a gallery to succeed must be equipped for much larger work as well.

THE career of a certain Western photographer who recently gave us a call, would seem certainly to give the lie to the assertion of which we hear too much, "that photography as a money-making business is played out." A few years ago he was without a cent of capital. He took a position as operator in Cleveland, saved enough to start modestly in Cincinnati, and now clears $30 a day and expects to do better. There is room for an enterprising gallery in any city in the Union.

A VERY pretty idea for an album or specimen book was recently given us "free, gratis, for nothing" by Mr. W. P. Deming, of Long Island. If your negatives are 5 x 8, print on a large sheet of ferro-prussiate paper, say 8 x 10, masking all but the part you wish to print. This will give you a large white sheet with the picture in blue in the center. After printing a sufficient number, bind in a book without mounting. The paper sold by our publishers is sufficiently heavy for this purpose.

THE Second Annual Convention of the Photographic Association of Canada was held on September 16th at the Art Society's rooms, 14 King street West, Toronto. Among the papers read we note "Photo-crayon," by J. Traill Taylor; "The value and benefit of photographic conventions," by W. H. Potter, of Indianapolis; "Posing," by E. Edgeworth, of St. Louis.

THE explosion of one hundred and forty tons of rack-a-rock and dynamite under six acres of the Flood Rock in the East River, between Astoria, Long Island, and New York City, was an event to call out a fine array of cameras. Scores of pictures were taken from every available standpoint, and we have already seen several excellent prints from some of the negatives.

OUR Mr. T. C. Roche obtained a beauty. Indeed he never goes out unless he can return with a trophy. He has promised us a print on his transparency plates, and from what we have seen of the negative, we shall highly prize it.

Mr. W. E. PURVIANCE has again achieved a grand success in large instantaneous pictures. We have before us a fine picture of the Flood Rock explosion taken by him on a 17 x 20

Stanley plate with a Prosch "Duplex" shutter. It nearly covers the plate, and is very remarkable for such large work.

RACK-A-ROCK, the explosive mentioned above, may puzzle some of our readers, and to satisfy their curiosity we will mention what it is. Nitroglycerine is made by adding strong glycerine to a mixture of strong nitric and sulphuric acids. Dinitro-benzole, which is one of the ingredients of the new explosive, is made by adding benzole to the above acid mixture. By mixing this dinitro-benzole with chlorate of potash, the new explosive is obtained. Either constituent is non-explosive alone; hence the materials can be stored separately with safety, and mixed when needed.

A FORGOTTEN photograph of Nathaniel Hawthorne has recently been discovered. It was taken in London twenty-five years ago, and will be engraved for *Harper's Magazine*.

MR. HARCOURT, who was on board of Sir Thomas Brassey's yacht, the Sunbeam, during her recent trip to Norway for the health of Mr. Gladstone, has obtained a number of photographs, which are to illustrate a new volume by Lady Brassey.

WE have before us two life-size photographs of heads. One of them is of Robert Bonner, the owner of the celebrated trotter, Maud S., and was made by Mr. George Rockwood, with a 20 x 22 Dallmeyer lens, on a paper negative. It is certainly a marvel of sharply cut work to the extreme edges. The other photograph is a copy of the picture of Mr. J. F. Ryder, made in five seconds on a Stanley Plate, by Mr. McMichael, of Buffalo. We noted the beauty of this work when we saw it at Buffalo. It certainly leaves nothing to be desired. We must thank both Mr. Rockwood and Mr. McMichael for these fine examples of their work. We cannot praise too highly the spirit of progressive artistic feeling that these pictures exhibit.

THE following note from Mr. W. B. TYLER explains itself:

At two o'clock, Thursday morning last, the large paper warehouse of Crocker & Co., Bush Street, San Francisco, caught fire. A general alarm was soon sounded, and Thursday noon found the exhausted firemen still fighting the flames. The entire building was gutted. Two firemen had been killed by falling ruins and several severely wounded and crushed.

Just at this moment an enterprising photographer appears on the scene, boldly crosses the danger line, and blandly requests permission from the chief engineer to take an instantaneous photograph of the scene. The obliging chief consents, and Mr. Photographer calmly sets up his camera, focuses, inserts a plate, and stands ready to seize the favorable moment. "Steady there, boys!" yells the chief, and steady it would have been had not one of the firemen slipped on the wet stones of the street, and the hose got away from the men holding it. There was a wrestle for the vagrant line; a shower of water falling on every one in the vicinity, while the photographer and his apparatus go scooting down the street propelled by the force of the water gushing from that line of hose.

This is the quickest change on record from the dry to the wet process.

W. B. T.

SAN FRANCISCO, Oct. 10, 1885.

INVESTIGATIONS ON THE CHEMICAL EFFECTS OF LIGHT.*

BY DR. J. M. EDER.

Contents.—I. BEHAVIOR OF FERRICYANIDE POTASSIUM AND ITS COMPOUNDS WITH OTHER SUBSTANCES TOWARDS LIGHT. —II. RELATIVE LIGHT-SENSITIVENESS OF FERRICYANIDE, NITROPRUSSIDE AND OTHER IRON COMPOUNDS.—III. DIFFERENT COPPER COMPOUNDS.—IV. INDIGO-SULPHATE OF SODA.—V. MOLYBDIC ACID. —VI. DECOMPOSITION OF CHLORINE WATER AND BROMINE WATER AND TINCTURE OF IODINE IN LIGHT, AND THE INFLUENCE OF ORGANIC SUBSTANCES UPON THIS PROCESS.—VII. DECOMPOSITION OF ALCOHOLIC CHROMATE SOLUTIONS IN THE LIGHT. —VIII. DECOMPOSITION OF IODIDE OF MERCURY IN THE LIGHT.

I.—Behavior of Ferricyanide Potassium and its compounds with other substances towards light.

It is known that an aqueous solution of potassium ferricyanide is decomposed by light with formation of a blue precipitate and ferrocyanide of potassium. About the course of the reaction and the quantity of the photo-chemical products, no particulars are to hand. By way of a study I exposed solutions of different concentration in sealed bottles from July 28 to November 2, 1884, to the influence of the changing sun and daylight, and left in the immediate neighborhood of these another sample of the same solution protected against light. The solution is in the beginning dark-brown, and changes later on to blue.

After this time a blue precipitate of Berlin blue had formed, besides ferrocyanide of potassium and free prussic acid. The Berlin blue was present as so-called "soluble Berlin blue." If collected upon a filter and washed, it begins to color the filtrate blue, as soon as the salts have been mostly removed. To determine the precipitate quantitatively, I washed towards the end of the operation with very diluted chloride of iron solution, and finally with alcohol. The precipitate was then dried at 100° C., and weighed.

The potassium ferrocyanide was determined in the filtrate, which reacted neutral, by precipitating with acetate of lead and treating the precipitated ferrocyanide of lead with permanganate of potassium.*

The existence of prussic acid in exposed ferricyanide of potassium solution is noticeable by a strong smell. Old exposed solutions develop much prussic acid when heated to 60° C.; fresh ones but very little. The former give also, during distillation with bicarbonate of soda, quantities of prussic acid that can be easily shown; the latter considerably smaller quantities.

The quantity of the decomposition products was determined in 150 *c.c.* of the following variously concentrated solutions:

An 8 per cent. ferricyanide of potassium solution gave 0.041 grm. Berlin blue and 0.703 grm. ferrocyanide of potassium. A 4 per cent. ferricyanide potassium solution gave 0.017 grm. Berlin blue and 0.432 grm. ferrocyanide of potassium. A 1 per cent. ferricyanide potassium solution gave 0.023 grm. Berlin blue and 0.322 grm. ferrocyanide of potassium.

This shows that in light seven to twenty-five parts of ferrocyanide of potassium (with prussic acid) are formed to one part of Berlin blue.

A 1 per cent. solution decomposes relatively quicker than an 8 per cent. solution.

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* Read before the Imperial Academy of Sciences of Vienna

* The ferrocyanide of lead was dissolved in caustic potassa and then acidified with muriatic acid.

Mixtures of a potassium ferricyanide solution with sugar or oxalic salts decompose quicker in light. A solution (150 *c.c.*) which contained 8 per cent. ferricyanide of potassium and 8 per cent. sugar, gave 0.092 grm. Berlin blue and 1.032 grm. ferrocyanide of potassium.

One per cent. ferricyanide of potassium and ½ per cent. oxalate of ammonia, gave (?) grm. Berlin blue and 0.64 grm. ferrocyanide of potassium.

Eight per cent. ferricyanide of potassium and 4 per cent. oxalate of ammonia, gave (?) grm. Berlin blue and 0.528 grm. ferrocyanide of potassium.

At the same time these mixtures decompose quicker than pure ferricyanide of potassium. That the one per cent. solution, when analyzed, gave a larger content of ferrocyanide of potassium, may be due to an inaccuracy in determining the same.

Ferricyanide of potassium and citrate of potassium are similar to the mixtures with oxalate.

Dissolved ferricyanide of potassium and acetate of lead give in the light a bluish-white precipitate of ferrocyanide of lead, which can be extracted with hyposulphite of soda, and also Berlin blue.

Ferricyanide of potassium and uranium sulphate is more sensitive to light than the former mixture; it gives a red-brown precipitate containing much ferrocyanide of uranium.

Ferricyanide of potassium and chloride of mercury is much more sensitive to light than each separately; it forms mercurous chloride, Berlin green and prussic acid.

II.—Relative light sensitiveness of Ferricyanide, Nitro-prusside and other Iron Compounds.

Dissolved ferricyanide of potassium is less sensitive to light than ferricyanide of ammonium. Both keep for a long time when the light is excluded. Hydroferricyanic acid solution becomes blue in the dark, but quicker in light.

Pure ferricyanide of iron acts towards light like a mixture of ferricyanide of potassium and iron alum. The latter decomposes also gradually in the dark, with formation of Berlin blue and prussic acid; in the light the process takes place much quicker.

Ferricyanide of potassium and chloride of iron (equal molecules) is also very unstable when the light is excluded. Berlin blue forms in the beginning; later on (after the light has acted upon the same for three months) Berlin green; this precipitate gives, after decomposition with potassium, ferro- as well as ferricyanide of potassium.

Excess of chloride of iron causes an immediate formation of Berlin green; but this will form in the light about three times as quick as in the dark. If ferricyanide of potassium was in the residue, blue will form in the beginning; after that, green. Prussic acid will always form (also in the dark.)

Dissolved nitro-prusside of sodium, whose sensitiveness to light was known for a long time, is about twenty times more sensitive to light than ferricyanide of potassium. In the light it forms Berlin blue and prussic acid, and the solution takes a strong acid reaction.

Nitro-prusside of sodium and chloride of iron is about twenty times more sensitive to light than the former separately, and is almost equal to the ferri-oxalate in sensitiveness to light.

The following table gives the relative quantitative photo-chemical decomposition of a number of substances in a three per cent. solution, during a four days' exposure to light of 40 *c. c.* of liquid.

1. Ammonia-iron alum and oxalic

acid gives 0.028 grm. ferrous salt (present as oxalate).

2. Ammonia-iron alum and citric acid gives 0.015 grm. ferrous salt (present as citrate).

3. Ferri-oxalate of potassium gives 0.022 grm. ferrous salt (present as oxalate).

4. Ferric oxalate gives 0.036 grm. ferrous salt (present as oxalate).

5. Nitro-prusside of sodium gives 0.002 grm. of Berlin blue.

6. Nitro-prusside of sodium and chloride of iron gives 0.039 grm. of Berlin blue.

7. Ferricyanide of potassium and iron alum* gives 0.004 grm. of Berlin blue.

8. Ferricyanide of potassium and chloride of iron gives in the light 0.039 Berlin blue.

9. Ferricyanide of potassium and chloride of iron (in the dark) gives 0.022 grm. Berlin blue (difference = 0.017 grm.).

10. Ammonia-iron alum and sugar.
11. Ammonia-iron alum and alcohol.
12. Ammonia-iron alum and urea.
No reduction.

Iron alum with oxalic acid or citric acid decomposes slower than ferric oxalate. It is to be remarked that chloride of iron and oxalic acid decompose quicker in light than ferric sulphate (in the form of the ammonia double salt). Oxalic acid in this case, therefore, succeeds in photo-chemical decomposition better with the chloride than the oxysalt. Chloride of iron and alcohol soon decompose in the sun with formation of ferrous chloride. Ferric sulphate is unchangeable in light with alcohol.

(*To be continued.*)

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* Changes so little during this time in the dark, that no precipitate forms that could be weighed.

THE CHEMICAL THEORY.

BY P. C. DUCHOCHOIS.

[Paper read before Photo Section of the American Institute.]

The chemical theory has been lately discussed in a masterly manner by Capt. Abney, in a communication to the Photographic Society of Great Britain; and the argumentation based on experiments made in conjunction with Dr. Hodgkinson, seems to leave no doubt as to the formation of a sub-salt during insolation of the argentic chloride—or bromide—without which this theory is unsustainable. However, I must still differ from the learned gentleman who has done so much for the advancement of photography, and hold to the theory based on physical phenomena, for reasons I will presently explain.

The preparation of an argentous chloride by chemical means does not infer that it is also formed when the argentic chloride is insolated. The action of light in this case is altogether different from that which takes place when two compounds whose elements possess certain affinities for each other are placed together. It is a reducing action, and it therefore follows that a dissociation should and does result from this action, as will be seen hereafter.

The novel theory of the formation of an argentous salt during insolation, is based on the hypothesis that at the moment chlorine is liberated the silver in the nascent state, *i. e.*, when its affinities are exalted, unites to the unaltered silver salt. But, as by prolonged insolation, metallic silver, whose presence can be ascertained by nitric acid, is found in the blackened compound mixed with the unaltered argentic salt, the hypothesis is not admissible, for the chemical action should continue until all the argentic salt be united to the reduced silver; since, according to the theory, chloride—or bromide—of silver "cannot exist in close contact with metallic silver," and "immediately metallic silver is formed, the molecules of bromide in contact with it become subbromide, thus: $Ag+AgBr=Ag_2Br$." (Abney.)

In the old chemical theory the argentous salt was thought to result from the dissociation of one atom of bromide, $2AgBr=Ag_2Br+Br$. And although the development was inexplicable, otherwise than by a new molecular arrangement or motion of the elements of the silver salt, the formation of an argentous salt—if such a compound does exist—by the reduction of the argentic bromide insolated under nitric acid, was, I think, explained in a more satisfactory manner.

For the analysis of argentic chloride acted on by light, ammonium hydrate was always employed by chemists—Dumas, Hunt, Field, Davanne—as a solvent of the unaltered chloride. I have in most of my experiments with the chloride and bromide operated in the same manner, not supposing that a dissociation could take place with a *true* solvent, on the hypothesis that a subchloride was formed. However, some experimentalists—and Hardwich was, I think, the first—admit that ammonium hydrate "splits up argentous chloride into argentic chloride and metallic silver." I confess I could never understand this action, since in the ordinary course of chemistry, when an element—or a compound acting as such—effects a decomposition, new combinations are formed. Thus solvents (an improper name by the by) such as potassium cyanide, sodium thiosulphate, sodium sulphite, etc., dissolve or, to speak more clearly, decompose the silver salts in forming double salts which are soluble in the solvent:

$2KCN+AgCl=KAg(CN)_2+KCl.$
$Na_2S_2O_3+AgBr=NaAgS_2O_3+NaBr,$
etc.

Consequently it would be rational to admit *a priori* that these solvents act similarly to the hypothetic argentous salts in dissociating an atom of metal:

$2KCN+Ag_2Cl=KAg(CN)_2+KCl+Ag.$

But since ammonium hydrate, which dissolves silver chloride as water dissolves sodium chloride, does not act on any of the components of this silver salt, how can one explain that it dissociates either partly or entirely an element chemically united to others:

$NH_4HO+Ag_2Cl=NH_4HO+AgCl+Ag_2.$

To my knowledge this remains without explanation. It has been said, however, to show that such is the case, that sodium chloride dissolves silver chloride, *leaving subchloride behind* from the mass of the argentic salt reduced by light.

Two years ago I attempted analysing the blackened substance by this solvent, but the figures were very conflicting in the confirmatory experiments, because the salt solution attacks to some extent metallic silver in forming a double salt. Thus:

$Ag+2NaCl+H_2O=NaAgCl_3+NaHO+H.$

However, if the quantitative analysis presents many difficulties, they disappear when ascertaining whether the substance contains a silver compound insoluble in sodium chloride. The results from recent experiments made in that direction confirm those I formerly obtained, which were entirely different from what is stated above in reference to an insoluble silver compound.

The argentic chloride, after eight days' insolation under a chlorine absorbent in four experiments, and without it in four others, was first treated with nitric acid, which showed the presence of metallic silver, and then with a hot solution of sodium chloride in four experiments, and in the others with a solution at the ordinary temperature.

By the cold treatment the operation required a period of from three to four days. Many changes of the salt solution, each allowed to act for several hours, were necessary to dissolve all the unaltered argentic chloride, which is sparingly soluble in the sodic salt; the quantity dissolved at 60° Fahr. being nearly 0.002 part of the weight of the salt, and 0.007 at 212°. The undissolved part consists of varying quantities of metallic silver, except in one experiment, when a small residue insoluble in nitric acid was found, but by after treatment with sodium chloride it was ascertained that the residue consisted of silver chloride and metallic silver.

The same result was rapidly obtained by the hot treatment (212°), with this difference, that the argentic chloride and the metal were dissolved, no residue whatever being left behind.

It is therefore manifest that no silver compound resisting the action of nitric acid and insoluble in sodium chloride, was formed during the reduction of the argentic salt by light; and, furthermore, that ammonium hydrate behaves exactly as sodium chloride with the blackened substance, the former allowing a quantitative analysis of the metal dissociated, which is almost impossible with the sodic salt.

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THEN AND NOW.

BY A. BOGARDUS.

[Read before the Photo Section of the American Institute.]

I SEE before me a number of the veterans in photography, and I also see some young men who have lately entered on the profession, and I thought it might not be time misspent to go back to the past and compare it somewhat with the present.

"Change is written on the face of everything," the tramp remarked, "except the face of my pocket."

In the early days of the helio picture, one impression completed the transaction; a new sitting for every picture; no duplicates—all originals. A man once asked me if I could take his picture if he only left his card. I told him we could not do it just then, but would at some future day, little thinking I was telling a fact.

Now, after the one sitting, impressions by the thousand can be made; and if we have the gentleman's negative, he *can* have pictures by handing in his card—always, of course, accompanied by the cash.

Then we did not ask for pay until the picture was finished and ready to deliver, a matter of some twenty minutes.

Now it is like going to the circus—you pay before you go in.

Then the fitting of the cap on the lens was a matter of consequence.

Now, who uses a cap? Touch a spring or pull a string and it's done.

Then the operator timed the sitting by holding his watch—if he had one.

Now the timing is done in his mind; and, fortunately for many, he does not need a watch.

Then we worked faithfully all the six days, and expected to rest on the Sabbath.

Now many work the seven days without the rest that nature requires; not only breaking the law of God, but breaking the laws of health as well.

Then the man who could execute a good picture was considered a scientific man—a man of genius and artistic skill—and he was sure of patronage.

Now the public taste has been so educated *up* or DOWN, that they go to the man who gives the largest amount of trash for the smallest amount of money.

Then the photographer mixed his own chemicals; made his own silver-bath; and, if he succeeded in getting pure chemicals, he generally knew what he was going to get on his plate.

Now he uses a plate prepared by a man some hundreds of miles away, and it may work well or it may not, and many plates are passed (for fear of not doing better) that by the old process would have been dropped in the bottom of the developing sink. Badly timed, badly developed, they print without a half tone in them, and much of the work is about equal to the work twenty years ago.

Then we showed no proofs. The impression on the plate was, of course, a likeness of the person in front of the camera—not disputed.

Now proofs must be shown, and everybody, from Master *Tough Boy* to *Grandma* with her specs, must pass an opinion on it; and, after it has gone the rounds of *kith* and *kin*, it is decided that the picture "don't look a mite like her," and you must *draw another*.

Then the sitter was expected, and generally did settle down into his natural expression, even if the sitting was some fifteen or twenty seconds.

Sometimes people say, "the photographer put me in such a bad light it made me scowl." Now, if you observe the people walking along the streets, you will find that two-thirds of them scowl naturally without knowing it. They do not know they scowl until they see an impression of the face, and then they say the photographer has done it.

We used to try various means to get people to look pleasant. One time I had a little music-box standing on the mantel, close to my arm, where I could touch a spring and the music played. One day an old gentleman, a German, was having some cards made, and as I removed the cap from the lens I touched the spring and the music went on. He made no sign of noticing it. Afterward he wanted a 17 x 20 picture made, and when I had arranged him anew and told him to keep a good expression, he said, "Go on with the music." He evidently enjoyed it.

Another time, when I touched the same box for a lady sitter, the music annoyed her very much.

One very comical scene I remember. A babe was brought down from Harlem, its mother, nurse, older sister and both of its grandmothers accompanying it. They said they did hope I would be able to take a good picture, as it was so hard for the whole party to come together again.

Now, with the instantaneous plate, it requires great judgment in the operator when to open the camera. He must watch the expression, know when it is right, and then is his opportunity. In fact I cannot find any decided improvements in the expression since the introduction of the instantaneous process. More difficult positions are made, and for children they are far superior to the old process.

Then, no retouching. The picture was delivered with every feature just as if transferred to the plate.

Now negatives are *re*-touched (by the way, I never could see where the *re* came from) until the real likeness is very scarce.

I believe in a judicious smoothing of the face. It should be done with great judgment. I do not believe in working the face into an egg-shell, even if it does suit certain persons of uncertain age.

Then the successful operator had a very high opinion of himself. Each one was the only man who was capable of making a picture that was *exactly right*, and it was astonishing how universally this rose-colored estimate obtained—some man in some other city could do fairly well, but he alone made perfect work in his city.

Now, this selfish idea has been to a great extent eradicated, and these men have found that others can do good work as well as they. If you attend one of the Photographic Conventions you will see work from the brains of different men, and I do not care how much you know, you will see something that never originated in your brain. I once stood in front of a small frame of pictures, made by a Western man who was but little known, with me two gentlemen of world-wide reputation; one of them said, "I thought I knew how to light a face, but the man that made that frame of pictures can beat me." Few men would have made such a confession. We grow when we are willing to learn and there is hope for such a man, but when he knows it *all* he is beyond redemption.

Then, with reasonable business qualities, a man could accumulate money, the prices obtained enabling him to do so.

Now the cutting of prices has reduced the profits so much, that few, if any, make much money after paying the heavy expenses of carrying on business. I do not know of any millionaires in this city.

Then a meeting of almost any kind was noticed in the papers several days after it occurred, and the subject of the meeting referred to.

Now, if your enunciation is good, and the hearing and hand of the reporter is quick, you may see all you have said, and sometimes more, in the next issue of the press.

Then we had no amateurs. There was no play about it then, but a difficult operation, and a man had to give his whole mind to it. Like Paddy, when he slept, they asked him why he snored so, and he said when he slept he gave his whole mind to it. No plates already coated for sale then. Could not carry your buff and coating boxes and set them down anywhere in the bushes.

Now we have amateurs in profusion, and very excellent workers many of them are. Others, with a cheap any-body-can-take-em outfit—plates already to use (every maker's plates the best)—picturing everything animate and inanimate, from the top of the White Mountains to the innermost recesses of the Mammoth Cave of Kentucky, and they generally get something—provided they use the coated side of the plate and do not expose it more than twice.

Then—Oh, glorious hour—no club pictures. If I had been asked in old daguerreotype times, "What is the price of your clubs," I should have thought a lunatic was loose, and I should have been tempted to look around for a club.

Now clubs are trumps and club tickets are hawked about the streets. And if the peddler cannot sell you some matches he tries you with a club ticket; and I shall not be surprised to see them sold from wagons, with the blowing of a horn—fresh and all alive, as eels and porgies are sold.

I think the great army of amateurs are acting as teachers. They have found that it is something to make a good photograph, and they can appreciate a good one when they see it. They now can see that it is not merely a piece of paper with a picture on it that comes out of a box by looking through it, and to be multiplied by turning a crank. It is now to them the product of a difficult, delicate, mystic art.

Now, dropping the contrast, I think many operators are getting indifferent. Is it any wonder? A majority of the people will take the poorest picture every time. Then, why exert yourself to make a fine picture when the sitter is going to take the poorest one? I will guarantee to make *three* fine, perfect impressions of a person and a *fourth* one out of focus, and nine times out of ten the poor one will be selected. It is a fact, people do not like sharp pictures. As they look at a friend they do not see the strong lines in the face as the *sharp* impression shows them. Years ago Messrs. Southworth & Haws, of Boston, had the reputation of making extraordinary fine daguerreotypes. Why? They worked with a large lens having a general focus; the picture was not very sharp, but *fairly sharp*, and was soft and delicate—more so than a finely retouched photograph.

The rapid advance and the wonderful achievements since the discovery by Daguerre, are, to one who has followed and seen them all, more like a vision or a dream than a reality, and yet seeing is believing, and I find it a reality.

The general public do not appreciate the wonders of the photographic process.

The pictures produced on the last field day of this section by our honored President and others are as wonderful to me as anything ever produced by man—truly magical.

The incoming waves, the crowd on the beach, the children wading in the surf with joy and glee, are caught and preserved; also I mention the photographs of the great procession—the Grant funeral obsequies. The regiments on the march, the catafalque, the prancing horses, the crowds on the streets—all pictured in perfection and preserved for future generations to look on. Is it not a wonderful accomplishment, and should not every man who has contributed to bring photography up to its present standard feel proud?

What would Daguerre say? What would Niepcé say, could they see these things?

And yet the general public will say, it is only a photograph. Yes, it is only a photograph, but the photograph is much more than they have any conception of.

It is related that when George Washington was President of the United States, a little boy had been promised to be taken to see the General. When the General passed through the town the little boy said to his father, "Why he is only a man." Washington placed his hand on his head and said: "It is only a man, but it is a great thing to be a true man."

Now, is not this difficult, delicate, mystic art worth all the labor, care, study, and experimenting bestowed on it. I, for one, say yes, and I think most of the men before me will say Amen.

And in this city, what do we see? Prices down below a living; the first sitting palmed off on the sitter, be it good, bad, or indifferent; work turned out without regard to its staying or other qualities, the operator making the first sitting as poor as possible, so that the sitter will pay extra for another chance.

A printer in one of these cheap shops told me they did not wash their prints more than ten minutes, as the owner of the concern did not want them to last, as then the customer would be compelled to buy some more.

Is it not mortifying to every man of feeling to see a process capable of producing such wonders, in some hands brought so low?

How shall we raise it?

Let every man deal honestly and fairly with his customer.

Charge a living price for your work

Give every sitter the worth of their money.

Use every means to bring your work up to the highest standard.

"Whatever is worth doing at all, is worth doing well."

Do this, and then you will be an honor to the profession and a worthy disciple of this wonderful, and—did I not call it—difficult, delicate, mystic art.

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[*From American Monthly Microscopical Journal.*]

OPTICAL ARRANGEMENTS FOR PHOTO-MICROGRAPHY, AND REMARKS ON MAGNIFICATION.*

BY ROMYN HITCHCOCK.

THERE are two methods of obtaining amplification in photographing microscopic objects. One is by regulating the distance of the sensitive plate; the other is by the interposition of an eye-piece or a supplementary lens, usually an achromatic concave, between the objective and the sensitive plate. It is the relative merits of these two methods that we propose to briefly discuss.

The fact that both methods are used by different persons with perfectly satisfactory results, might lead to the inference that it is purely a matter of convenience. This, however, is not the case, for the ordinary eye-pieces are not very perfect optical instruments, and it can scarcely be supposed that they will preserve the perfection of an image formed by an objective in all its details. The conditions in photography are somewhat different from those of ordinary observation, wherein the defects of the ocular are not noticeable. The eye fails to discover a curvature of the image, which is very evident when the latter is spread over a flat focusing screen six or eight inches square. In photography much depends upon whether the operator uses large or small plates, for with a small plate giving a field of three or four inches, very high magnification can be satisfactorily attained by the aid of an ocular. For ordinary purposes such plates are quite large enough, but when we come to large sizes, such as eight by ten-inch plates, the eye-piece will not give sharp definition all over the field.

The eye-piece enables one to obtain increased magnification with short camera-bellows, and we have seen small photographs of difficult subjects taken with the eye-piece which leave nothing to be desired. Nevertheless, for the more difficult objects, and whenever finest details are to be photographed, we would not advise its use. By far the better plan is to use a long camera box, and get amplification by increase of distance. In this way very good results can be obtained, but it must be observed that the objective requires to be specially corrected for the distance of the plate, and this is not only inconvenient, but in many cases quite impracticable. Thus, in using an objective of the oil-immersion form without any collar adjustment, one can only focus the image on the plate by causing the objective to approach nearer to the object than where it is used in ordinary observation.

Another plan, which has been highly recommended by Dr. Woodward, Dr. Van Heurck and others, is to make use of an amplifier.* Dr. Woodward was the first to point out the advantages of the amplifier in photo-micrography, and also to give instructions for its proper application.

In working with objectives corrected with the utmost care for a definite length of tube, it is obvious that any change in the course of the rays passing through the objective will introduce aberrations which will impair the definition. If we focus upon an object with the ocular, then remove the ocular and receive the image upon a focusing screen several feet away, the objective must be moved nearer to the object in order to give a sharp image on the screen. Shortening the working focal length in this way obviously interferes with the normal course of the rays through the lens, and it is, therefore, not possible to obtain such a perfect image in this way as may be seen with the ocular. It will readily be seen that the only way to secure the best definition is to focus the objective with the ocular, for then we know the corrections are properly adjusted, and then make the image sharp on the distant screen without the eye-piece by means of a supplementary lens. Mr. Zeiss attempted to do this by providing suitable correcting lenses to be screwed into the back of the objective, which were calculated to correct the aberrations when the screen is at stated distances away. A better plan, however, was employed by Dr. Woodward, who understood the problem and solved it in a satisfactory manner. He made use of an amplifier by Tolles, which he found to be most satisfactory of all at the time.* The amplifier was placed in a draw-tube, so that it could be moved out or in as required. He found that for any given position of the screen there was a corresponding position for the amplifier at which the image was as sharp and perfect as when observed with an ocular, the objective meanwhile remaining unmoved. Herein is the secret of Dr. Woodward's unexcelled work in photographing the most difficult test-objects. He used no small plates, but the images of *A. pellucida* were ten inches in length, clear and sharp throughout. It is safe to assert that such pictures cannot be taken with an ocular, or even without the correcting lens properly applied. These facts are either not generally known, or they are sadly neglected by those who have most need to apply them; for in these days of photographing the most difficult of all objects, the various forms of bacteria, the utmost sharpness of definition is required if the results are to possess permanent value.

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* Read before Section G, at the meeting of the A. A. A. S., Ann Arbor, 1885, by Dr. H. G. Beyer, U. S. N.

* For Dr. Van Heurck's device, see *Am. Monthly Micros. Journal*, vol. VI, p. 45.

We now come to another question of importance in connection with this subject, viz., how much shall we magnify with each objective? We already know there is a limit, clearly determined by calculation for each objective, dependent upon its numerical aperture, beyond which no further amplification will bring out additional details. Beyond that limit increase of magnification only enlarges the details then visible. Experience clearly shows, also, that as we increase amplification beyond a certain point, with every objective, we lose in sharpness of definition. This should be borne in mind in photographing with the microscope. The negative should be taken with only such magnification as gives perfectly sharp definition. By far the greater part of the general photographic work of microscopists is done with powers not greater than 250 diameters, and rarely indeed is 400–500 diameters required.

This, however, will depend upon the work to be done. In photographing diatoms, Mr. J. D. Cox has used powers of a thousand and twelve hundred diameters very successfully, and Dr. Woodward's celebrated photographs of *Amphipleura pellucida* were taken with magnifications of more than two thousand diameters. The magnification of certain photographs in our possession is 2,700 to 2,900 diameters with an $\frac{1}{8}$-inch objective, and 3,400 with a $\frac{1}{12}$-inch. The frustules measure about ten inches in length. Considering this fact and the size of the pictures, embracing as they do the entire length of the frustules in perfect focus throughout, we regard these photographs as the most perfect that have yet been produced. They conclusively demonstrate that it is practicable to make photographs with the highest powers which shall equal the best definition the lens is capable of giving with such magnifications; but as there is a limit to the sharpest definition of every lens as ordinarily used in observing with an ocular, there must also be such a limit in photography. The rational method would seem to be to get a sharp negative with as much magnification as possible, and make enlargements from that if required. In working with an amplifier, enlargements will seldom be desired; but without the amplifier, with or without an ocular, the limit of successful direct magnification is much reduced.

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* See *Am. Monthly Micros. Jour.*, vol. i., p. 5

A perfectly sharp negative will bear considerable enlarging without noticeable loss of detail. In an article published several months since* reference was made to some negatives about the size of an English sixpence, of bacteria, which competent judges pronounced excellent. These bore enlarging to the size of ordinary lantern positives. These were taken without the eye-piece, in a very small camera attached to the tube of the microscope. The opinion was expressed that "better negatives of bacteria and very minute objects can be produced without the eye-piece, by obtaining more perfect small negatives than by original large negatives." Dr. Van Heurck also holds to the same opinion. Nevertheless, one may carry a very reasonable opinion to such an extreme as to lose the value of it. There is no reason for making negatives so small that a lens is required to examine them. There is, in fact, a decided disadvantage, in that greater enlargement is required by a photographic copying lens, and however excellent such a lens may be, it will not hold its sharp definition when required to magnify. Therefore it is advisable to make the negative from the microscope at least as large as a 3¼ by 4¼ plate will take.

Summing up this matter, we are personally inclined to favor the use of large plates, 8 by 10 inches for example, in photo-micrography, using the lens with an amplifier instead of an eye-piece, for the reason that large pictures, highly magnified, can thus be obtained of exquisite definition. These will bear further enlarging with the solar camera. There remains, however, the consideration of expense, and the inconvenience of using such a large apparatus under ordinary circumstances. It is unquestionably more convenient, in most cases, to use smaller plates, and to work with an eye-piece. Still better, to use an amplifier in place of the ocular, for then it is possible to attach the amplifier to the camera in such a position that when the object is focused with the eye-piece it is also in focus on the ground glass of the camera when the latter is attached. With such an arrangement a quarter-plate camera can be used with perfect satisfaction, giving negatives equal to any that can be made.

The same cannot be said when the ocular is used, although there is no doubt thoroughly satisfactory results can be obtained with the ocular on small plates, as already explained.

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All communications for the columns of the Bulletin *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

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* *Am. Monthly Micros. Jour.*, vol. vi, p. 28.

[*From the Photographic News*]

HOW TO SUCCEED IN TAKING GOOD PICTURES ON GELATINE PLATES.—No. III.

BY S. R. BOTTONE.

RETURNING to our dark room with our exposed plate, we carefully close the door and look around to assure ourselves that no white light is entering at any unsuspected cranny. This being satisfactorily ascertained, and remedied if it occur, we proceed to pour out in the developing dish six drams of the saturated solution of potassic oxalate, to which we add two drams of the saturated solution of ferrous sulphate. (Among many other reasons why I advocate the employment of ferrous oxalate as a developer, especially for beginners, is because the color of the solution is such, that, when once the plates are fairly under it, ordinary light has no effect upon them.) Opening the dark frame, we place our exposed plate in the developing solution, gelatine surface uppermost. We then immediately commence to rock the dish, so as to ensure evenness of development. Rocking, by exposing the plate to fresh, unused portions of the developer, is conducive to brilliancy and contrast, while allowing the solution to remain still favors softness.

It will be found that those portions of the plate which have received the largest exposure will flash out almost immediately and will soon *gray* all over, whilst other portions will be slower in coming out. Perhaps some will not come out at all. At any rate it will be well to leave the plate in the developer for at least ten minutes, agitating from time to time. The plate may then be removed from the solution, placed in a dish of clean water to wash off the adhering ferrous oxalate, then plunged in the fixing solution (one part of sodium thiosulphite to four of water), whence it must remain until all the milky-looking bromide has been removed, and then transferred to a bath containing—

Chrome alum	5 grains.
Water	2 ounces.

After soaking in this bath for five minutes to harden the film, the plate may be brought out to daylight and well washed in a stream of running water.

Not all plates require treatment with chrome alum, as some have the alum added during manufacture. These are, in general, somewhat less sensitive than the others, but these latter tend to frill in warm weather. The use of the alum bath is never injurious, and often saves a good plate coming from unknown source. It must be particularly noted that while the plates are fixing—*i. e.*, while they are in the fixing bath, or moistened with it—they should *not be exposed to strong light*. Light and hypo together reduce the strength of the image in a very marked degree.

Our picture being washed and dried, we can examine it at our leisure. That portion which has received the correct exposure will present the following characteristics: 1st. The high lights, viewed by transmitted light, will appear black, almost opaque. The deep shadows will show as clear glass without any veil or mistiness; the delicate gradations of half-tone will be clearly visible at all points, except in the very deepest shadows.

If none out of the ten divisions show these characters, then none of the exposures have been right, and the plate shows either one or the other of the following appearances:

1st. Every portion is more or less veiled over. No part of the image is dense enough to give a print with a fair amount of contrast. Or,

2d. The high lights alone have impressed themselves, and these stand out very black and dense, while the shadows and half-lights are clear glass.

In case 1 the exposures have all been too long. In case 2 the contrary effect prevails and the exposures have all been too short.

It is not likely, under the circumstances presupposed, that this latter defect will show itself. It will more probably be found that the portions marked 10, 9, 8, 7, 6, 5, 4, will be over-exposed (the former very considerably), while 3, 2 and 1 will be nearer the mark. If all these should show veiled shadows and thin images, it will be well to try a second plate, using a stop on the lens of only half the aperture (which requires four times the exposure).

Although an experienced eye can judge pretty fairly of the printing qualities of a negative by mere inspection, yet, before deciding on which exposure has given the best result, it might be well to print from the negative in full sunlight, using ordinary albumenized paper, and giving about five minutes sunning. A negative requiring more than that exposure will be generally found too hard and too slow to give satisfaction, while one that prints in less than three minutes will generally be found wanting in contrast.

Having thus found which portion of the plate gives the desired image, we have only to refer to the numbers on the slide to know which exposure this corresponds to, and this exposure will be a guide to our future work with that particular lens and that particular make of plates. Having once obtained fair results with any particular make of plates, the amateur should adhere to them until he has conquered every difficulty and knows every peculiarity connected with them. He would also do well to keep to one developer and, indeed, to one set of receipts until he has perfect control over his work. Then he may launch out into experimenting with other plates and other developers, etc., with the certainty of learning something useful.

My next paper will contain directions as to the mode of controlling (within certain limits) the development of plates which have been unduly exposed.

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[*From Comptes rendus des seances de l'Academie des Sciences.*]

CHEMICAL AND PHYSIOLOGICAL EFFECTS OF LIGHT ON CHLOROPHYL.

BY M. H. TIMIRIAZEFF.

MM. Dumas and Boussingault, in their "Essay on the Chemical Statics of Organized Beings," for the first time noted the possibility of a harmony between the physiological effects of light upon the living plant and its chemical action in the formation of the photographic image.* Some years later analagous ideas emanated from Helmholtz.† These first efforts to establish a relationship between vital phenomena and purely chemical effects lasted until overthrown by the fact, established by Daubeny and W. Draper, that the decomposition of carbonic acid in the plant is due to a group of rays entirely different from those to which we attribute almost exclusively the chemical effects. But the more recent progress of vegetable physiology and photo-chemistry, thanks to the researches of MM. Vogel, E. Becquerel and Abney on the sensitizers, shows from new evidence a harmony between physiological phenomena in living tissues and those which constitute the basis of modern photographic processes.

The decomposition of carbonic acid is found to be in agreement with the elective absorption of chlorophyl, and this last substance exercising, as demonstrated by M. E. Becquerel, a sensitizing action on the salts of silver, gives rise to the belief that the physiological action of this substance, in part at least, makes it a sensitizer.[*] One point still remained for elucidation. From studies on sensitizing substances, the researches of Albany in particular, it appears that, to play the part of a sensitizer, it is not sufficient that the substance absorbs certain rays, but that it should also suffer decomposition in the same rays that it absorbs.[†]

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* Loc. cit., p. 24.

† Ueber die Wechelwirkung der Naturkräfte, 1854. Pop. Vorträge, p. 127.

The coloration of chlorophyl under the influence of light is a fact well known since Senebier; but physiologists generally attribute this effect, not to the rays absorbed by the chlorophyl, but to the greenish-yellow rays, which are but little absorbed. Although this opinion be in contradiction to the facts established for some time by Herschel and W. Draper, and more recently by Démentieff,[‡] it appeared to me of sufficient interest to submit this point to direct proof, being so important for the theory of the chlorophyl function. Here are the results of experiments made in July and August, 1883.

In order to eliminate the sources of error due to the unequal dispersion of the prismatic spectrum, and also to obtain at the same time a light as intense as possible, I have adopted the ingenious method proposed by M. Paul Bert, which consists of recomposing the light previously dispersed by a prism. I used for this effect an apparatus consisting of a cylindrical lens and a prism of a small refractive angle, generally used for experiments on complementary colors. This disposition permits of making two comparative experiments at the same time. The two focal images of complementary colors were sometimes received on small test glasses containing water, with 30 of carbonic acid in 100, and a small branch of *elodea;* sometimes on a plate of glass covered with a collodion film, with an addition of a little chlorophyl. Ten minutes' exposure was generally sufficient to obtain, on the one hand, the necessary quantity of gas disengaged by the plant, and, on the other, an impression of the two luminous images on the sensitive film of chlorophyl. For determining the quantity of oxygen disengaged by the plant, I have used a new method, which may be called *micro-eudiometric.* Reserving for another communication a description of this method, I will limit myself to the indication of the principal results obtained.

The spectrum was divided into two equal parts, with reference to the normal spectrum; the two focal images were colored yellow and blue. The physiological effect and the chemical effect coincided perfectly, the maximum of action being found in the two cases in the yellow, while the effect of the blue light was hardly sensible.

The blue-violet part of the spectrum was eliminated by means of a sheet of tin applied to the glass plate which received the spectral image. The less refrangible part of the spectrum was decomposed into two bands, red and yellowish-green, of equal extent (always with reference to the normal spectrum). The physiological effect and the physical effect were again found on the same side, the maximum being in the red.

Finally, discarding the sheet of tin and placing the small prism in the yellow-green part of the spectrum, I obtained two bands, one a greenish-yellow and the other violet. The latter contained almost all the radiations absorbed by the chlorophyl, while the first contained the green light which is reflected by vegetation. The result was in this case easy to foresee, the two maxima being found on the side of the violet band.

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[*] C. Timiriazeff. Recherches sur la décomposition de l'acide carbonique. (Annalés du Chimique et de Physique, 5th série, T. xii, 1877.)

[†] *Nature*, Dec. 15, 1881, p. 166.

[‡] Inst. Jahresbericht, 1876, p. 924. The experiments of M. Démentieff were executed in my laboratory and under my direction.

The facts which have been established permit of formulating our knowledge of the chlorophyl function in the following terms:

I.—Chlorophyl acts as a sensitizer in experiencing decomposition and in causing the decomposition of carbonic acid in those regions of the spectrum which it absorbs.

II.—The different rays absorbed by the chlorophyl effect the decomposition in very different degrees. The maximum of decomposition essentially coincides with the maximum of energy in the normal spectrum. Hence, from the distribution of energy in the normal spectrum, established by MM. Langley and Abney, we arrive at the conclusion that it is to the amplitude, rather than the rapidity, of the vibrations that the disturbance of the molecules of carbonic acid is due, and finally its dissociation. It is precisely those vibrations that possess the greatest amplitude that are energetically absorbed by chlorophyl and transformed into chemical work.

III.—The chemical effect of light in the photographic camera may be perfectly analogous to the physiological effect in the living plant, on condition that the impressionable substance presents in the two cases identical absorption phenomena, and that in both cases this is chlorophyl.

So that, by a vicissitude, not without example in the history of science, we find, under a form slightly modified, the initial idea on the analogy between vital phenomena and chemical processes announced by MM. Dumas and Boussingaut just a quarter of a century ago.

EXHIBITION OF THE PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN.

London, October 6, 1885.

Dear Bulletin,—Since writing you last, I have enjoyed the greatest treat of the current season, viz.: a visit to the exhibition of the Photographic Society of Great Britain. The display is simply exquisite, and beyond all previous ones. There are 673 displays of photos, and 93 of apparatus.

The columns of your journal could be filled for months if only a meager description of each picture was given, so I will merely name such as received the medal of the society for excellence, and a few others that specially attracted my attention.

No. 47 (22 x 18), Group of Orchids and Ferns, life size, Henry Stevens.

No. 74, Dawn and Sunset, H. P. Robinson. Dawn being represented by a young child on its mother's lip, and Sunset by an old man.

No. 91, 4 (12 x 10) Views, T. M. Brownrigg.

No. 128, 9 (12 x 10) Yacht Racing Scenes, W. Symonds.

No. 161–3, 9 (10 x 8) Views in Switzerland, Wm. Muller.

No. 182–3, 12 (10 x 8) Views of Tyrol, Seymour Conway.

No. 224, 15 (12 x 10) Portraits "Home Photographs," W. J. Byrne.

No. 254, 6 (12 x 10) Tintern Abbey and Raglan Castle, School of Military Engineering.

No. 259-60, 9 (10 x 8) Views in Switzerland, F. Beasley, Jr.

No. 320–3, 4 (22 x 18) Portraits, J. Lafayette.

No. 339, 2 (17 x 14) Views in Greece, W. J. Stillman.

No. 348, 9 (8½ x 6½) Views in Austrian Tyrol, W. Wainwright, Jr.

No. 354, Enlargement, Oriental Interior, Hector Collard.

No. 368, Enlargement, Views in Engadine Valley, Wilson Noble.

No. 505, Photogravure, A Fairy Raid (30 x 18), Annan & Swan.

No. 506, Autogravure, Fac-simile of Early Italian Engravings, Autotype Co.

No. 510, Tongue of a Blow-fly (24 x 20), Mansell J. Swift.

No. 526, Girl at Spinning Wheel (8½ x 6½), John Terras.

No. 530, Strengthening the Understanding, a Cobbler Working and Reading, W. W. Malby.

For Negatives on Double Coated Sensitized Tissue, L. Warnerke.

Although the foregoing are the pictures selected by the committee for the medals, I must say their work was not to be envied. Without exception I think it the finest collection of photographs ever shown, and I sincerely hope, for the benefit of all interested in this enchanting art, that it will be continued beyond November 14th, and that every one will visit it, as such cannot but benefit one and all. The Autotype Company make a display of enlargements about 5 x 3½ feet, notably among them 140, of John Ruskin; 175, Right Hon. Joseph Chamberlain, M. P.; (8½ x 6½) Views by J. P. Gibson; (12 x 10) Views by Robert Slingsby; (8½ x 6½) Views by B. J. Edwards; Yacht Racing by G. West & Son; Explosion of 250 pounds gunpowder in 30 feet of water, 6 views, ¾ of a second apart, by Lieut. Hawker, R. E.; Mezzotint Argentic Portraits by Morgan & Kidd; Studies of Breaking Waves by W. P. Marsh; (12 x 10) Views by J. Montague Copeland; Newhaven Fishing Scenes by James Crighton, etc., etc.; in fact to enumerate all the gems is to give you the complete catalogue.

With few exceptions all the negatives were taken on gelatine plates. Few samples of results from negatives on argentic paper were shown, and I regret I cannot dilate on their beauties, but hope to see an immense stride in this line before the next exhibition.

The display of apparatus includes everything in its line, and is very interesting. The improvements in this line are many, and it would seem as if the wants of every one could be supplied. They are so largely advertised and illustrated that I cannot attempt to add to such description. A most accommodating gentleman is on hand to explain all points.

AMATEUR.

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NEW SOCIETIES.

St. Louis, October 8, 1885.

To the Editors of the BULLETIN.

Please give us space in your valuable journal for the inclosed notice, and oblige, yours truly,

JAMES A. SHERRARD,
Sec'y St. Louis Amateur Club.

A well-attended meeting was held at Parlor 17, Lindell Hotel, on September 29th, for the purpose of organizing an Amateur Photographic Society in this city.

Mr. W. H. Wilcox was elected chairman and James A. Sherrard temporary secretary. Messrs. Behrens, Olhausen and Bishop were appointed a committee to draft a constitution and by-laws. After some further discussion the meeting adjourned, to meet Monday, October 12, 1885.

The prospects are very encouraging for a large and influential society in this city.

MINNEAPOLIS, Oct. 17, 1885.

GENTLEMEN,—We have organized an Amateur Photographic Society of twenty-five members, which we soon expect to increase to fifty.

We are now fitting up our reception and dark rooms.

Yours truly,
G. A. HOFFMAN.

[We are glad to hear the above, and wish the projects every success. EDS. OF BULLETIN.]

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THE BULLETIN is truly artistic in design and filled full of *valuable knowledge* for the photographer. Please put me on your list of subscribers. W. G. ENTREKIN.

[*From the Photographic News.*]

FERROUS OXALATE DEVELOPMENT.

BY S. R. BOTTONE.

It is not necessary to wash or wet the plate previous to immersion in the ferrous oxalate developer. If the plate carries water with it into the developer, it will nearly always cause a sulphur-colored precipitate of ferrous oxalate, which is nearly insoluble in water. If a plate is so horny and hard as not to take the developer kindly, it may be soaked for a few seconds in the stale oxalate. Should a deposit form, through having inadvertently used too weak a developer, it may be removed after fixing by rubbing lightly with the moistened finger under a running stream of water.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Regular Meeting.

In consequence of the delay in the receipt of the stenographic report, we will give a brief epitome of a regular meeting, held at the society's rooms, 1260 Broadway, on the evening of the 13th inst., following with a full report in a subsequent issue.

A ten-cent pneumatic release for drop shutters, made out of a metal pen-holder, and which worked as freely as if it had been specially manufactured, was shown by Mr. Grisdale. Also, by him, an easy way to convert an ordinary lamp into a red lantern.

Mr. Beach showed a Teisdell candle dark-room lantern, and an improved mode of packing dry plates, samples of the boxes having been sent him by the manufacturer, Mr. F. D. Bull, of St. Louis, Mo. A new developer, styled by Mr. Beach "Everton's one-solution concentrated pyro developer," was exhibited.

Proofs were then shown by many members of the Flood Rock explosion, that of Mr. Fisk's taking the lead for artistic merit and good location on the plate. Mr. Fisk presented a beautiful transparency of the same to the society. Messrs. Anthony & Co. also presented a very large picture of the explosion, by Purviance, on a Stanley plate 20 x 22.

Considerable interesting discussion then followed, after which a resolution was passed that a series of photos relative to the different experiences of the members at the explosion be presented to Gen. John Newton.

Dr. H. G. Piffard showed a new chemical, phenol-phthalein, which, when dissolved in alcohol and put on white bibulous paper, made the latter more sensitive to an alkaline solution than ordinary litmus paper. When dipped into an alkaline solution the paper instantly changed to a brilliant red, which could not be mistaken.

Mr. Beach related his experience in developing with two solutions and exhibited negatives. In some respects he thought it superior to the ordinary one-solution method.

After a little further discussion, the meeting adjourned at 10:15 P. M.

Special Meeting.

A special meeting of this society was held at the rooms, 1260 Broadway, on the evening of September 22d. Called to order at 8.20. The *President* in the chair.

Dr. P. H. Mason was appointed Secretary *pro tem.*

The *President*—The first business of the evening will be the exhibition of an improved Prosch shutter, which Mr. Cooper will kindly describe to the members.

Mr. Cooper stated that the negative of the large photograph of the Genesta, on the wall, had been exposed with this shutter. It was intended to be placed midway between the lenses, just in front of the diaphragm slit, but the manufacturer made a special lens tube adapted to receive the lenses of an ordinary Ross or Dallmeyer, or any other special make when desired, so that the original tube need not be changed. The working portions of the shutter are inclosed in a neat metal case, about $\frac{3}{8}$ of an inch thick, which rises transversely above the top of the lens tube. At the upper end of the case, on its interior, are pivoted two thin, fan-shaped metal shutters, suspended, as it were, from the handle end of the fan; the extreme upper end of said handle being enlarged into the form of a circle. A horizontal slot is cut near the periphery of each circle, in line with the center, and as one shutter is placed in front of and overlaps the other, the slots coincide, and a pin from an outside pivoted lever passes through and operates in the slots. The centers or pivots of the handle circles or disks are separated a short distance apart in the same horizontal line. The fan portions of the shutter have a large triangular-shaped aperture cut in them, equal to the size of the lens tube. When the outside lever is raised the shutters are closed and as it is released and rapidly falls, being impelled by a spring, the pin on one side engaging in the slot as it comes down between the centers of the handle circles, forces the shutters apart, making the apertures coincide. As the pin passes below the centers, the shutters are drawn together and closed. The outside operating lever has a peculiar device at its free end, by means of which time exposures can be made; a second catch is provided, arranged to stop the movement of the lever after it is first released by a pneumatic piston which holds the shutters open; a second pulsation of the piston releases this catch, permitting the shutters to at once close. The simplicity and certainty of the working of this device and the shutter was favorably commented upon.

The *President*—I have a series of photographs, presented by Mr. Elbridge T. Gerry, showing views of the Genesta and Puritan before and after the collision which occurred on the second day of the race. I have also to acknowledge the receipt of a book, entitled "Notes on Photography," by Arthur Williams, a lieutenant in the United States Army, presented by Dr. Janeway, and some photographs of Ceylon presented by Messrs. Munn & Co. I also wish to call your attention to a fine picture of the Genesta which has been presented to this society, through me, by Messrs. Anthony & Co.

A letter from Messrs. Anthony & Co. was read, describing how the picture was made, as follows:

NEW YORK, *Sept.* 22, 1885.

F. C. BEACH, ESQ.,
President Amateur Photographic Society of New York.

DEAR SIR,—We take pleasure in presenting to the society herewith an instantaneous photograph of the *Genesta*, by Mr. W. E. Purviance, made on a 17 x 20 Stanley plate with a Dallmeyer rapid rectilinear lens and Prosch shutter, which we trust they will accept with our compliments.

Very truly yours,
E. & H. T. ANTHONY & CO.

A vote of thanks was tendered to Messrs. Anthony & Co. for the picture. Its size was 17 x 22; not a defect was to be observed.

Dr. Mason will pass around a photograph which is simply a curiosity, from the fact that it represents a hairless calf. It was taken in Nebraska. You will find the details are on the back.

I received to-day a series of very pretty little pictures, taken with a detective camera of his own construction, from the Secretary of the Pacific Coast Association, Mr. W. B. Tyler. He promises to send the details of the camera later, describing how it is made. In his letter to me he gives hints of some parts of it.

I also desire to call your attention to this very beautiful collection of photographs, which it has been my privilege to place on the wall this afternoon. They were loaned to the society for exhibition by Mr. G. Gennert, and represent the foreign exhibit of photographs sent to the Buffalo exhibition in July. Some of them are extremely large and clear and are well worthy of our attention.

Concerning the matter of irregular cut plates, thick plates and thin plates, I had occasion the other day to hear from one of our members that he had some trouble because the plates were too thin. In this case he put the thin plate in the holder, and when he took it out to develop it, he found it was broken in two. The pressure of the spring in the holder had cracked it. So, as Mr. Walker says, you can not only listen to the rattle of the glass plates "like the rattling of dead men's bones," but also hear them crack.

Mr. APGAR—I have had an experience in that line. I bought a box of plates, and found there were but ten in the box and I could use but three of them. The plates were so thick that the manufacturer could get but ten in the box. I carried them back to the dealers and they handed me another box. None of them could be used because they were so thick.

Mr. BEACH—That is quite an important experience; we should like to hear from any others.

He then exhibited a small 4 x 5 camera, sent by Messrs. Anthony & Co. for inspection. It was styled "the Novelette." In place of the screw bolt which was formerly used to hold the folding bed rigid, a sliding thin metal plate, sliding in grooves on the inside edge of the bed frame was employed; by this means the former thumb-screw bolt was dispensed with and time saved. The lightness of the camera was spoken of, it weighing at least half as much as a similar camera made three or four years ago, showing a marked advance on the part of the manufacturers.

The *President* then stated he had just received a note from Messrs. Morgan & Kidd, of London, announcing the sudden death on the 5th inst. of Mr. Walter B. Woodbury, of London, England, a gentleman who, he said, had exercised a great influence upon methods of photography connected with mechanical printing. As he was aware that Mr. J. Traill Taylor was a personal friend of Mr. Woodbury, and had been long acquainted with him, he believed that the members would be glad to hear Mr. Taylor on this subject.

[An engraving of Mr. Woodbury in the *Photo. News*, and a specimen of the Woodburytype in the "British Journal Almanac" of 1884, was then passed around.]

Mr. TAYLOR said he would have liked, had he had previous intimation of such a request as that made by their President, as in that case he would have been prepared to have given them a full account of his life and photographic labors. At present he would have to confine himself to only two or three points. First, Mr. Woodbury had for some time been in ailing health, and, in order to induce sleep, he had been in the habit of taking an opiate. Having visited the popular seaside resort of the Londoners, Margate, along with the younger members of his family, he, to obviate the fatigue of traveling, had taken a dose of laudanum which had proved in excess of what his system was able to stand. His death would be greatly lamented everywhere. Mr. Woodbury was a man of varied and extensive information and a most genial disposition. As an inventor he was full of resources. His great invention, the Woodburytype, was introduced just twenty years ago, and he (the speaker) was one of a small party invited to see the first demonstration of it made. Several crudities then existing had since been removed, all the improvements emanating from Mr. Woodbury himself. The well-known Goupil system of engraving was understood to be an outcome of Woodbury's invention, and it was exercising a revolutionary influence in engraving. The latest of Woodbury's discoveries was the Stannotype method of printing, which was eminently suited for the amateur as well as the photographer on a large scale. The services rendered by Mr. Woodbury to the cause of photography had, only three or four weeks before his death, been recognized by his having been awarded a gold medal by the Commissioners of the International Exhibition of Recent Inventions. He was cut off in the prime of his life.

Attention was then called to the proposed society's exhibition, and members were reminded to prepare for it, as it was desired that it be a creditable one. Mr. Beach then continued: Last week I was in Hartford and was given a very cordial reception by the "Hartford Camera Club," and I may say if any of our members go there I am sure they will be treated nicely. I should like to give their members when they visit this city the same attention they gave me.

The principal thing on the programme this evening is the exhibition of a new magic lantern, which is the invention of Professor C. G. Fairchild. Mr. Fairchild has kindly consented to bring the apparatus here and show it to us; and I will further mention that this is the new lantern which Mr. Taylor spoke about last June, and which he told us he thought was one of the coming inventions in the lantern line, and that it was worthy our attention, and so I have been able to secure it to show you this evening. Professor Fairchild will now explain the principles of the lantern.

Prof. FAIRCHILD Mr. President and gentlemen: Your published notice that my lantern was to be "thoroughly tested" caused me to hesitate. I felt that neither I nor my lantern were in condition to be "thoroughly tested." My own experience with the lantern has been very limited, and the lantern that I have to-night was constructed, most of it, over my own bench, and is, of course, in a somewhat crude condition. We do not come to make an exhibition, but simply to show the principles employed. My contribution to the lantern, if after experience it shall prove of practical value, is in the more simple and economical manufacture of the gases necessary for the oxy-hydrogen light. With this arrangement a man is able to make the gases himself, to make them as he uses them, and *only* as he uses them, and still have the whole machine in portable condition. As we have it here, a pair of lanterns, with apparatus for the manufacture of the gases for the oxy-hydrogen light, can be carried easily by one person anywhere.

Prof. Fairchild then showed a small tube containing the mixture for generating the oxygen gas necessary for an evening's exhibit. The generation of the gas is regulated by passing the tube over a heater as may be needed to meet the consumption of the gas. A small pressure bag, holding about a cubic foot of gas, was shown, and after the use of the lantern for nearly an hour it was again exhibited, showing as much gas as when the exhibition commenced, so that all the oxygen gas was manufactured as it was used. The hydrogen element was manufactured automatically by vaporization of some suitable hydro-carbon, as alcohol, kerosene or gasoline. One small heater is sufficient for the generation of both these gases.

Mr. BEACH—How long does a section of oxygen tube two inches in length burn?

Prof. FAIRCHILD—Perhaps ten minutes. You move it along about an inch at a time, as you see by the regulator, as is needed. A tube of this size under ordinary circumstances will run an hour and a half. My twelve-year old boy has run this lantern for continued use in my classes without any drawback.

Mr. T. H. McAllister, of Nassau street, has undertaken to bring this lantern into the market.

[A recess was then taken and a large number of beautiful lantern slides were shown. The smooth working of the apparatus and the brilliancy and steadiness of the light were quite remarkable for so compact an instrument. The pictures were very easily dissolved from one to the other. The pressure of the gas was ample and the flow steady. The thought of being able to produce brilliant lime-light pictures at our country homes with so little trouble was especially attractive. A large field is open for this useful invention.]

Mr. BEACH—I think, gentlemen, that we have been very well entertained, and that we should thank Mr. Taylor for calling our attention to it and Prof. Fairchild for showing it.

Dr. JANEWAY: Some time ago, General Newton visited Governor's Island and mentioned the fact that they expected to blow up Hell Gate some time in the next month (October), and that he would like to get some photo views of the explosion during the different stages of the same. I expressed the desire that members of our society might have an opportunity to get some shots at it. I would like to suggest that a motion be made asking permission for members of the society to expose their plates on that day, and that such facilities be granted them which they could not get in any other way except from the proper authorities. I do not care to make the motion myself, but if some one else will make it, I will forward it to him, with a personal letter, and have no doubt but that members will be granted special privileges and have excellent opportunities afforded them.

Mr. BEACH: I think Dr. Janeway's suggestion very appropriate, and I am sure there are many gentlemen in the room who would be willing to offer a motion that I be directed to write to General Newton.

Dr. MASON: I will make a motion to that effect. Carried.

Dr. JANEWAY: I move that a vote of thanks be extended to Mr. Gerry and Mr. Munn for the pictures of the collision of the Genesta and Puritan. Carried.

Dr. ELLIOTT: Mr. President, I would like to say a word or two in favor of the very ingenious apparatus we have seen here this evening for dissolving views. I have had some experience with oxygen and hydrogen gas in Columbia College, and I have seen nothing in the way of apparatus so ingenious as this and so portable. There have been many devices invented, but the difficulty with the light has always been, that if you have a dense picture you cannot get light through it; and from what I have seen here to-night this is certainly the greatest invention I have seen for the purpose. I would move a vote of thanks to Prof. Fairchild for his exhibition. Unanimously carried.

Mr. BEACH: I have been requested to announce that on the 7th of October, Mr. Abraham Bogardus will lecture before the Photographic Section of the American Institute at Clinton Hall. I have not learned what the subject is. I believe Dr. Janeway has something to say about a recent trip he took.

Dr. JANEWAY: I did not come prepared to make any remarks on plates this evening, but, being called upon, will state that I was fortunate enough to get a short leave not long ago, and exposed a new brand of plates—at least new to me. I think I had previously exposed three or four of these plates. I made fifty exposures—all drop shutters—brought them home in my truuk, and found that six had been broken in transportation. On developing the balance I had forty very good negatives, some of the best I have ever taken. Two were light-struck—cause, a lady trying to find out how the plates were put in the holder—and two were misses. Some of the large fragments were placed in the developer and gave evidence that they would have given good results, had they not come to an untimely end. I think these results speak well for these plates and a very good success.

Dr. ELLIOTT: Before we adjourn I would like to say one word about these pictures around the room. I had the pleasure of seeing them at Buffalo and hope that the members will be able to see them by daylight. They lose immensely in beauty of tone by this light. I am sure that any one who saw the pictures at Buffalo will say they were the most beautiful toned pictures there.

At 9:45 P. M. the meeting adjourned.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

MEETING October 6, 1885. *President* NEWTON in the chair.

The usual vote of thanks was given for the periodicals received.

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee have simply to report, as already announced, that a lecture will be given this evening by Mr. Abraham Bogardus, entitled "Then and Now."

Also resolutions offered by the Executive Committee concerning the death of the President of the Institute, Cyrus H. Loutrel.

The lecture for the regular meeting of the section, on Tuesday evening, November 3d, will be by Prof. L. H. Laudy, on "The Uses of the Stereopticon," illustrated.

J. B. GARDNER,
Chairman of Executive Committee.

Copy of letter and resolutions concerning the death of Cyrus H. Loutrel, President of the American Institute from 1883 to 1885.

Mr. President and fellow Members: It was the intention of the Executive Committee to write a brief sketch of the life and work of our late President, Cyrus H. Loutrel, as a preface to the resolutions concerning his death which are to be offered for your approval this evening. In the endeavour to collect facts for this purpose, his son and successor in business, Mr. F. Loutrel, was called upon, and cheerfully responded by sending to the Chairman of the Executive Committee the following letter, which contains so much in so small a space, and is so suggestive of the vast field of labor passed over by the deceased, as well as the intelligence, moral integrity, love of serving others, and the unremitting activity essential to hold and to keep the honors bestowed, that anything the committee could prepare in detail would only be less *apropos* to this occasion.

Without further prelude then, allow me to read the letter before offering the resolutions.

NEW YORK, September 22, 1885.

Mr. GARDNER.

DEAR SIR,—In harmony with your request, I send you the following.

Cyrus H. Loutrel was born in the City of New York, February 16, 1821, died June 16, 1885.

Was a clerk in store of E. S. Mesier, stationery, in 1834. Started firm, Francis & Loutrel, 1844.

Joined 27th Regiment (N. G. S. N. Y.), now the 7th Regiment, in 1839, and was Captain of Company 6 at the formation of the 7th Regiment (N. G. S. N. Y.). Was one of the charter members of the Veteran's Association of the 7th Regiment, and in the first term of eighteen years as a member of the Veteran Association, was Captain, Lieutenant-Colonel, and Colonel. Was one of the Committee on building the New Armory for the 7th Regiment. Was a Commissioner of Emigration for the State of New York, and served a number of years with G. C. Verplanck as President, and S. F. Winston, Vice-President.

At times Director in the following Insurance Companies: Knickerbocker, Hamilton, Hope, Commerce, New York City, Peter Cooper, Sterling, Resolute, Fireman's Funds, Sun Mutual, New York and Boston, Importers' and Traders', Washington Marine, Globe, Mutual, and Central Park.

Was at various times president or acting president of eight different insurance companies.

Joined the American Institute in 1856, and was Trustee many years. Was one of the Vice-Presidents at the time Horace Greeley was the President, and was elected President in 1883.

Was a member of the St. Thomas, Protestant Episcopal Church. A member of the Mechanics and Traders' Society, Board of Trade, and honorary member of the Old Guards.

President of the Thaddeus David's Company and of the 7th Regiment Veteran League.

Sincerely yours,
T. LOUTREL.

Mr. President and Gentlemen: It must be apparent to us all, that a man who could honorably hold, for so many years, the noteworthy positions enumerated in this letter, must have been a remarkably busy man, and must have possessed more than ordinary executive ability as well as mental and physical endurance. Hence his loss must therefore be not only severely felt by his family and immediate relatives and friends, but by a very large circle outside of these, in the social and business world.

It is then with no heartless formality we offer the following preamble and resolutions concerning our faithful friend and late coworker in the advancement of the uses for which this institution was founded or established.

Whereas, During the present summer vacation of this section, the President of the Institute, Cyrus H. Loutrel, has been removed by death from our midst; and

Whereas, He always manifested a heartfelt interest in the welfare and prosperity of this branch of the American Institute, and did all in his power to extend its usefulness; and

Whereas, The members of this section feel deeply his loss, while at the same time they bear witness to his integrity and moral worth, and most sincerely unite in rendering their meed of praise to their fellow member and late President; therefore,

Resolved, That we extend our heart-felt sympathy to his family in their irreparable loss; and as a slight token of our remembrance of his invaluable services, not only as the most highly honored officer of the American Institute, but as a leader in the commercial interests of the country, a worthy member of the Episcopal Church, and a citizen alive to all tbe vital interests which constitute the strength and insure the welfare of the American people; therefore.

Resolved, That the brief sketch of his life to which we have just listened, together with this preamble and these resolutions, be preserved with the permanent documents and history of the section, and a copy of the same be tendered to the family of the deceased.

Before putting the question, the *President* said: During all the time that I have been president of this section, we have had no president who has taken so keen and lively an interest in the success and general usefulness of this section as Mr. Loutrel. Immediately upon his election he made himself acquainted with this part of the American Institute, and interested himself in our work and gave it his support in a manner that no president has done while I have been president of this section, and I heartily approve of these resolutions.

The resolutions were unanimously passed.

Mr. NEWTON—Next in order is reading of the papers, which will bring our distinguished fellow-citizen and member, Mr. Abraham Bogardus, to the front.

Mr. BOGARDUS then read his paper. [See page 618.]

At the close of his paper, Mr. Bogardus gave the following personal reminiscences of celebrated men:

"When Henry Ward Beecher came for a sitting, he said his eyes stood out on his face like a lobster.

"I remember the morning General Garfield came. He had on a soft felt hat, and he said: 'I am at your service for twenty minutes.'

"General Grant, I think, said about ten words. He was introduced, shook hands, passed to the chair and sat down. He pulled out a bunch of cigars and laid them down on the table, and some of the boys looked anxiously at them.

"Some years ago Charles O'Connor was reported as dead, but it was only a false report. He came along a few months after and said: 'Some time before I died you made a negative of me.' I told him that he was the first man that had ever come back for a photograph after death.

"I had taken a number of negatives of old Dr. Tyng, and I siad to him once: 'Doctor, please turn a little to the side.' He said: 'I am an upright man, and turn neither to the right or left for anybody.'

"When I was down town, there were a number of wholesale grocers who, having nothing to do one day, proposed to have their pictures taken and exchange them with each other. They tried to see how comically they could have them taken. One had a paper in front of his face, so that nothing but his eyes were shown, and another had his beard drawn up over his face and a high hat on."

Mr. DUCHOCHOIS' paper was then read by Mr. MASON. [See page 616.]

Mr. NEWTON—In the first paper we are carried back and then brought forward from the past to the present in a very remarkable and agreeable manner. It is not only pleasant, but useful, to be shown in such a pleasant way what has been accomplished since the days of Daguerre.

It is not possible for the mind to conceive and fully comprehend the small amount of time which elapses in taking what we call an instantaneous photograph. I was talking with Captain Ingalls, who has charge of the artillery practice at Fortress Monroe. There they have a method of photographing the cannon-ball in its flight, immediately upon its projection from the mouth of the cannon, by which to determine the rapidity of its flight. A cannon-ball going 500 feet in a second is photographed while traveling twice its diameter.

That fact will permit you to form a better conception of the period of time consumed in making that picture. This process has come to be *the* process. The bath plate, the nitrate of silver bath, and the collodion plate are numbered among the things of the past. But I have been lately informed that some of the best operators in this country have gone back to the nitrate of silver bath and collodion plate; because they say they cannot make as good work with the gelatine dry-plate process as with the bath plates. They say they get hard negatives, strong high lights without detail, and deep shadows without detail. This brings forward an interesting question: Is the trouble with the dry plate or with the operator? I have had considerable experience not only with the bath plates, but with most kinds of dry plates, and I will make this assertion—that I will, with an ordinary dry plate, whether collodion emulsion or gelatine emulsion, make as fine detail and as fine gradation in a negative as can be made by any known process. But it cannot be done by methods ordinarily used in galleries, for this reason: Those who have adopted the use of dry plates in galleries have been in the habit of using bath plates. In my journeys among different galleries I have observed this, so that I know what I am talking about. They light a sitter for a bromide plate, or a plate sensitized with bromide of silver, precisely as they do a bath plate sensitized with bromo-iodide of silver. The result is hard high lights; no proper gradation between the high lights and deepest shadows. The action of light upon the bromide of silver is not the same as upon the bromo-iodide of silver, nor is the action of light upon the iodide of silver the same as on bromo-iodide of silver.

In lighting a sitter for a negative on a dry plate, it should not be lighted the same as it is for a bath plate. You will not get the same result; and that, in my opinion is where the trouble is. The high light should be subdued, and the shadows illuminated, so that on the ground glass the contrast is nothing like as strong as it is on the picture made on a bath plate. It was a long time before any of the bromides were used in England for bath plates. There is not one picture or negative in twenty of a sitter made in a gallery in England in a bright light. They are mostly made when the sky is overcast, and the shadows and high lights are not in such strong contrasts, as there are many more cloudy days in England than sunny.

The action of bromide in conjunction with the iodide is just this—it does not make the plate more sensitive, but the bromo-iodide of silver is more sensitive to the weaker lights.

That is what bromide does in conjunction with iodide in proper proportion. It will make the shadows more sensitive, so that you will get more detail in the shadows without increasing the high lights. I have experimented with every possible form between twelve grains of iodide to no bromide, running from one-half grain of bromide up; so that there was an excess of bromide and then the same of iodide. With six grains of iodide and two grains of bromide you have as much bromide as will be of service in producing the modifications mentioned. Go on increasing the bromide until there are equal parts of iodide and bromide, and you have precisely the same results as you would if there was only bromide or only iodide—the hard contrasts between the high lights and shadows. That is the result of my experience. I have made many experiments with a combination of these salts in every conceivable manner. I made some with twelve grains of bromide and of iodide, and one grain of iodide, and so on, until I had twelve of iodide and one of bromide.

The maximum of any advantage in that direction is eight of bromide and four of iodide; you can run it down until you get six of each. You gain nothing by the result with either bromide or iodide. Five of iodide of cadmium and one of bromide of cadmium in one ounce of collodion will produce all the good results you can get with those salts. It is clear to my mind that the fault is not in the plate.

But where you are working a plate that is entirely composed of bromide of silver, you can't get the same result as you get with a bath plate with the same lighting. The light for the dry plate has to be subdued, and the high lights subdued. The shadows will take care of themselves if you expose for the shadows and not for the high lights.

By taking a subject and lighting it properly, I will produce all the gradations from the high lights to the shadows in their most perfect form with a bath plate or any dry plate. These things have been said before and I have given the result of my experiments years ago, but they need to be said again and again; and in view of the fact that many have rejected the dry plates and gone back to the bath plates, I say that it is not the fault of the plate, but is the lack of knowledge just how they should be used.

There are twenty-five or more manufacturers of dry plates in this country, and they all send their own formulas with their plates. I have tried them all, and with very few exceptions their developers are radically defective. Some of them give more than double the quantity of pyro than should be used. They want to have people believe that their developer is a very rapid developer, and we are in such a hurry to get through with what we have to do, that we do not take the time necessary to get the best results. Use less pyro and take a little longer to get your intensity, and you will get better negatives. A developer that takes a large amount of pyrogallic acid will develop the negative quickly, but it will not give a good negative. It will give strong high lights, very little in the shadows, harsh contrasts, and will get hard, flat prints, because you have procured sufficient intensity on the high lights before the plate is developed. Using a smaller quantity of pyro, and taking a little longer time, you will get a much better negative.

Mr. **Ferris** said that in his opinion the dry plate makers sacrificed the good to the quick, and that it was not so much the lighting as the developing of the plate.

Mr. **Newton** said he would contract to make as good a negative on a dry plate as any one could on a bath plate, and he thought he could make a better one.

Mr. **Mason**—I should like to have these two gentlemen enter into this contest, taking the majority of votes as a decision.

In Mr. Bogardus' paper he mentioned to me an interesting subject, the amateur and his work. I think men who are recognized as amateurs should be classified. They have done so in England. As soon as a man sells a picture or receives remuneration for photographic work, he ceases to be an amateur. If we would establish that rule, we would know where to find our amateurs.

Meeting adjourned.

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BOSTON SOCIETY OF AMATEUR PHOTOGRAPHERS.

THIRD ANNUAL EXHIBITION.

The following rules and classifications have been adopted for the third exhibition of this society, which is to take place the last of November or the first of December.

RULES.

1. No prints that have been already publicly exhibited shall be admitted.

2. Only amateurs who are already members of a photographic society shall compete or exhibit.

3. Members of societies at a distance shall defray all expenses of expressage or transportation.

4. No exhibit shall be considered in competition unless the exhibitor, at least three days before the exhibition opens, files with the hanging committee a schedule of all his pictures, arranged in classes according to the printed list.

5. All photographs offered must be accompanied by a complete list and a statement whether framed or simply on mounts, and the size of mounts.

6. No photographs, except stereoscopic, will be received on single mounts less than 5 x 8. All smaller than this size must be grouped on a larger mount for convenience of hanging.

7. The society reserves the right to obtain a copy of each picture to which a prize is awarded.

8. All lantern slides shall be exhibited at a previous meeting of the society, for which suitable lanterns will be provided, and the prize shall be awarded by vote of the members.

9. All prints shall have their labels attached in such a way that they can be read from the front, and they may bear the true name of the maker or a pseudonym. The hanging committee cannot undertake to attach loose tags.

10. The same picture may be entered in more than one class, but it can obtain but one prize.

11. The committee reserve the right to reject all or portions of any exhibit offered.

Stereoscopes will be provided for the proper exhibition of all stereoscopic views.

CLASSIFICATION.

I. Landscapes. Three prizes.

II. Marine views. *a.* Surf. *b.* Sail.

III. Architectural.—Including entire buildings or portions of the same.

IV. Interiors.

V. Snow and ice.

VI. Portraits.—Including heads and full figures.

VII. Nude figures.—Including artistic and athletic studies.

VIII. Animals. Two prizes.

IX. Flowers and fruit.

X. Trees.

XI. Machinery.—Including scientific apparatus.

XII. Sculpture.

XIII. Other manufactured objects.

XIV. Anatomical.

XV. Microscopical.

XVI. Stereoscopic.

XVII. Instantaneous effects. (Except surf and sail.)

XVIII. Enlargements.

XIX. Groups.

XX. Composition.—On given subjects.

XXI. Lantern slides.

XXII. Transparencies.

XXIII. For any new or remarkable processes not before publicly exhibited.

XXIV. Porcelain prints.

XXV. Blue prints or other chromotypes.

XXVI. Platinotypes.

XXVII. Copies of paintings.

XXVIII. Collection of photographs, not less than twelve, taken in foreign countries.

XXIX. Grand prize for entire exhibit.—Variety of subjects, processes and general excellence.

Attention is called to rules 4 and 6, as the work of the hanging committee will be lessened thereby. For further information, labels, etc., address

JOHN H. THURSTON, *Secretary*,
Cambridge, Mass.

As we go to press, we learn that the Third Annual Exhibition of this Society will be held in the Gallery of the Boston Art Club, corner of Dartmouth and Newbury streets, November 24, 25, 26, 27 and 28.

Packages by express should be marked, Boston Society of Amateur Photographers, care of Boston Art Club.

All packages by mail should be sent to the Secretary, John H. Thurston, Cambridge, Mass.

Those intending to exhibit will please notify the Secretary as early as possible.

◆

A FRENCH chemist has made the alarming discovery that, by the treatment of corpses to baths of certain metals in solution, the body can be made more perennial than brass, and that hereafter a realistic age will be able to do without the statue of a great man, because it can set up the great man himself, solidified into gold, silver, copper or other metals.

PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

REGULAR meeting of the Pacific Coast Amateur Photographic Association, held Thursday evening, October 8, 1885. *President* SMITH in the chair.

Minutes of last meeting read and approved.

The Committee on Exhibition requested further time to report. Granted.

Messrs. Shafer and Haines were proposed for membership. Referred to proper committee.

The Prize Print Committee, Messrs. Oliver, Abadie and Passavant, were granted one week further time to report.

After considerable discussion, "Caught" was chosen as the subject for the next prize picture.

The corresponding secretary read a large number of communications from American and foreign amateurs and photographic societies, and passed around for inspection about a hundred exchange prints.

Mr. Partridge exhibited the Eastman roll holder, and explained the working thereof. The beauty of the workmanship and ease of manipulation elicited much praise from the members.

Mr. Gibbs showed several fine marine views, and also an instantaneous whole plate print of the tug Rockaway, taken upon an Eastman film. The negative was made late on a cloudy afternoon, an 8 x 10 Ross lens, middle stop, being used, with a very quick drop working behind the lens. The exposure was about 1-100 second.

The negative is clear, bright, fully exposed and full of detail, and is a practical proof that it is possible to do good instantaneous work with paper films. The negative was developed with potash and sulphite.

A very large number of prints and negatives were exhibited by the different members.

At a late hour the meeting adjourned.

W. B. TYLER,
Corresponding Secretary.

◆

WE have to thank MR. S. B. McCONNICO, the President of the *North, Central and South American Exposition*, at New Orleans, for his kind invitation to the opening on November 10th, and also for the hospitalities extended to our journal. We wish the project every success, and hope we may be able to be present during the period that it will be open this winter.

What Our Friends Would Like to Know.

N.B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—A subscriber writes :—I send with this a print I made about three months ago ; as you see, it is yellow in one corner.

I fixed in hypo, 1 to 8, for fifteen minutes and washed thoroughly. A great many of my photos come out in the same way. If you will be kind enough to help me out through your BULLETIN, you will greatly oblige.

A.—The stain you call attention to is from imperfect fixing. It is the result of the decomposition of the compound of silver and hypo. Fix longer and wash well.

Q.—S. F. T. writes :—I should feel obliged to you if you would answer me the following questions, through the columns of your neat and indispensable BULLETIN.

What is the best and quickest way for drying gelatine negatives?

Also, what is the best formula for toning bath to make purple or black tones from dry plate prints?

Also, how long does it require for prints to remain in fixing bath before they are thoroughly fixed? Please name strength of fixing bath.

I find it rather tedious to weigh out chloride of gold every time I strengthen my bath. Please state the best way to make it up in solution that will keep good without the gold becoming precipitated at the bottom and around the sides of the bottle?

By answering the above questions you will confer a favor.

A.—To facilitate the drying of gelatine negatives, flow with alcohol two or three times.

To tone prints a purple-black, first wash pretty thoroughly in water, and then tone in a gold solution containing

Gold chloride	1 grain.
Sodium chloride	5 grains.
Water	6 ounces.

with enough bicarbonate of soda, in saturated solution, added to make distinctly alkaline to red litmus paper. If above solution works slow, place the dish in hot water until the solution is warm to the hand. After toning wash well and fix in bath

Hypo	1 ounce.
Water	8 ounces.

where they are left for half an hour, with frequent turning and separation. Wash well in running water.

Don't try to weigh chloride of gold. Either buy a solution ready made, or make it yourself. In the last case, dissolve a 15-grain bottle of the dry chloride in 7½ ounces of water ; then each ounce of solution contains 2 grains.

Views Caught with the Drop Shutter.

AT the *Exposition in Milwaukee* this year, MESSRS. PAUL & SHAPE made a very large and complete display of photo goods, including Dallmeyer lenses, climax and novel cameras, together with cottons, varnishes, and collodions from the factories of our publishers. They also had a large frame, about four by seven feet, containing a large display of photos made by the amateurs of Milwaukee, all of which would be a credit to any class of amateurs. The display was one of the first we have seen of late in a general exposition, and it was very creditable.

The photographic exhibit was not large, but included some very fine work from the studios of W. A. Armstrong, Mr. Stein and Mr. Chadbourne, all of Milwaukee.

IN connection with exhibits at general expositions, we note that at the *Louisville Exposition*, photographs were exhibited by COL. TABOR, of San Francisco, HENRY DREW, Louisville, HEIMBURGER & SON, New Albany, Ind.

NEW YORK, October 8, 1885.

E. & H. T. ANTHONY & Co.,
Publishers BULLETIN.

Gentlemen,—Inclosed please find copy of a memorandum prepared by Mr. J. Trail Taylor, with directions from him that it be sent to you. Yours truly,

SCOVILL M'F'G CO.,
FULLER.

J. TRAILL TAYLOR.—In our announcement of Mr. Taylor's being about to leave New York, we stated that his connection with the *Photographic Times* had been severed. This, we are glad to learn from Mr.

Taylor, is not the case; because, although compelled by domestic and other reasons to remain for some time an absentee from New York, his connection with the photographic journalism of New York remains still unsevered. Mr. Taylor's appreciation of the meteorology, scenery, manners and customs of the United States of America are well known to his friends.

CADY.—Peacefully entered into rest, Ann Eliza Cady, widow of David K. Cady, in the eighty-fourth year of her age.—*Cincinnati Enquirer.*

Mrs. Cady was the mother of Mr. D. K. Cady, well known to the photographic community in connection with the old firm of P. Smith & Co.; he is the sole representative of that firm. We sympathise with Mr. Cady in his affliction.

WE have to thank the PROVIDENCE AMATEUR PHOTOGRAPHIC ASSOCIATION for their kind invitation to the Annual Reception held in the rooms of the Providence Art Club. The note of invitation is unique and artistic.

IN a fire in Harwood's block at Newport, R. I., on September 25th, HOLLOWAY's photographic establishment was burnt out.

J. B. SHANE, of Lawrence, Kansas, has recently built a fine brick and stone structure to replace his old gallery, which became inadequate to meet the increased demand for his work. A *Herald-Tribune* report gives the following particulars. "In the reception-room, a piano adorns one side, while on the other is a large library of choice books, with easy chairs, sofas, and bright photographed faces adorning the walls. Opening from this is the operating room, 25 x 28 feet, with the special advantage of an extra sky- and side-light, constructed so as to be utilized as desired. In this room several landscape paintings are nicely arranged, and serve as a background The furniture is all new and the instruments of the latest and best patterns made. The Dallmeyer lens which Captain Shane is using is the largest and best made, and is so acknowledged by the photographic fraternity. The camera used with this lens is the latest improved Climax, with lever attachment, by which the most minute adjustment of the focus can be obtained. Developing trays, printing apparatus, in fact everything about the establishment, is of the latest and most improved pattern. Taken in its entirety, the gallery is one of the finest and best arranged in point of light, scenery, furniture and instruments to be found in the West."

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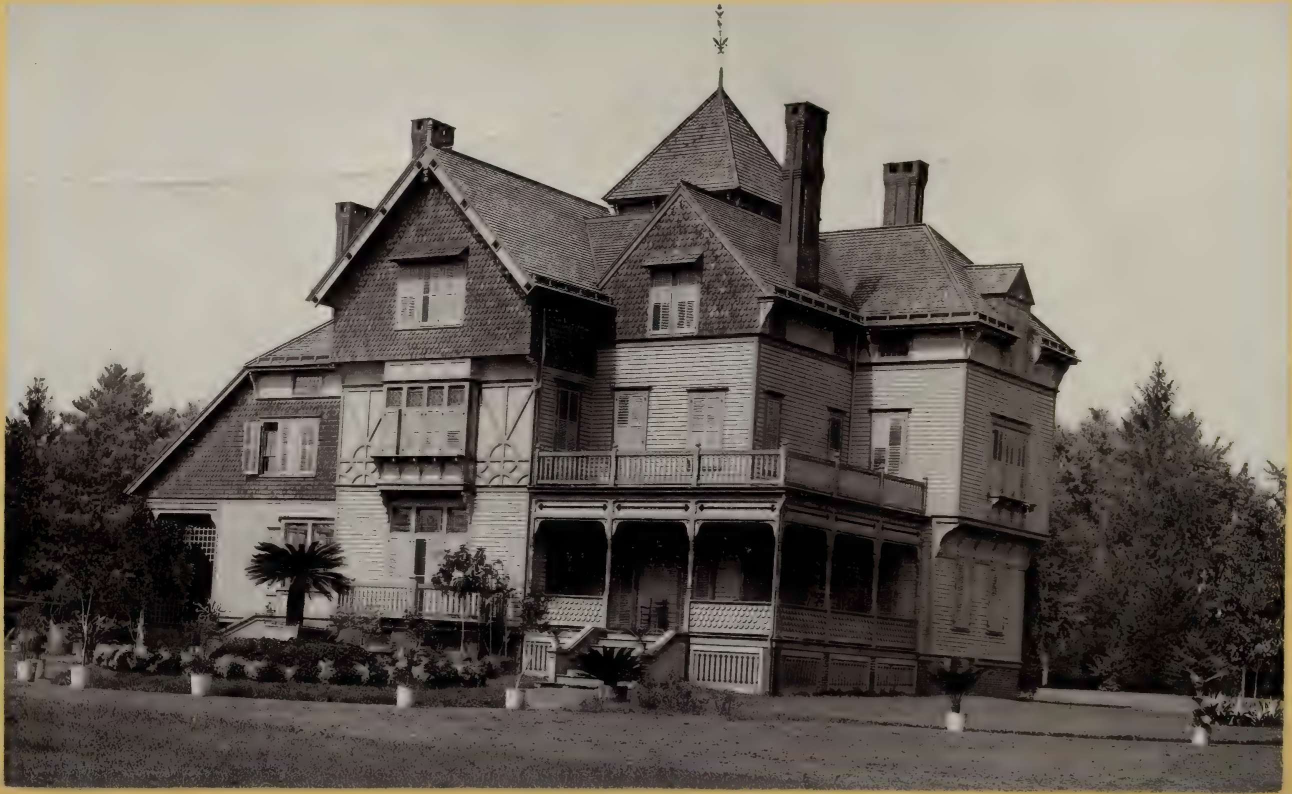

NEGATIVE BY
MR. JOSEPH T. LOW.

ANTHONY'S Photographic Bulletin.

PUBLISHED SEMI-MONTHLY,

Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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Vol. XVI. SATURDAY, NOVEMBER 14, 1885. No. 21.

PROF. W. H. PICKERING'S WORK IN SOLAR PHOTOGRAPHY.

To the ordinary photographer the excursions of the scientific explorer into new fields of research are of little interest until definite results are obtained and formulated. Nevertheless, these advances should be noted, and since Professor Pickering, of Boston, has made some valuable contributions in this field lately, we will review them for our readers.

For some time past a most interesting discussion has been going on between the English astronomer, Doctor Huggins, and Professor W. H. Pickering, of Boston, in relation to the problem of photographing the solar corona without an eclipse. To those of our readers that are less posted in solar physics, we would say that this "solar corona" is the name given to the halo of light seen around the sun during a total eclipse. Many experiments have been made to block out or absorb, by some medium or other, the greater light of the sun itself and only get a view of the coronal light. To do this for the human eye seems an utter impossibility, except by an eclipse; but from the study of the nature of the photographic sensitive film, it appeared that this surface was far more sensitive to different grades of light than the optic nerve of man. With this idea in view, Dr. Huggins fitted up a reflecting telescope and attached to it a well-arranged photographic apparatus. By taking negatives of the sun without an eclipse, and then comparing these with others taken during the eclipse as seen from the Caroline Islands, he believes he has proved that a photograph of the solar corona can be made without an eclipse, by using suitable apparatus. Dr. Huggins labored under great difficulties from the want of a clear atmosphere in England, and obtained the assistance of the Royal Society to send a party to the Riffel, near Zermatt, in Switzerland, an elevated position 8,500 feet high. Unfortunately, the various red halos that have been such common phenomena during the last few years, interfered at even that high altitude with a successful demonstration of the process, although Mr. Ray Woods, the photographer on the occasion, obtained negatives which are said to show a more or less distinct image of the corona.

Professor W. H. Pickering, of Boston, repeated Dr. Huggins' experiment, and obtained results that appear to prove that the corona photographs may be due to an effect produced by the earth's atmosphere. When these results were published they called forth a reply from Dr. Huggins, which led

Prof. Pickering into some extremely interesting experiments in solar photography.

From an observation of Professor John W. Langley, it had been determined that the light of the solar corona had a brilliancy which varied from six times to one-tenth of that of the full moon, being least at three minutes of arc from the sun. A photographic plate to be used for this coronal photography and give any detail in the negative must, therefore, be capable of registering light of one-tenth the intensity of moonlight. But as the observations of Professor Langley were made with the eye, a series of experiments were instituted by Professor Pickering to determine the photographic difference that one illuminated surface should have over another to make a perceptible contrast on the photographic plate. That the photographic plate does not take up differences of light and shade which are readily perceptible to the eye, is evident from the fact that distant mountains often fail to impress their image on the sensitive surface, and the impossibility of photographing the moon in the daytime. Both of these objects may be visible to the human eye, but fail to give a distinct impress on the photographic plate. In testing a number of plates of various brands, it was found that differences of illumination as small as five per cent. would be detected if the division lines were an inch long, but if the division lines were only an eighth of an inch long it was impossible to distinguish differences of less than ten per cent. in illumination.

With the above plates, observations were now made upon the sun and neighboring sky. Without going into details, it is sufficient to say that the photographic difference between the sun and the sky in its vicinity varies from one to sixteen hundred, to one to sixty-four hundred. Comparing, in the same way, the sky near the sun with moonlight, it was found to be about four hundred times greater than the light of the full moon. On the same day the ratio of the sky to the sun was twenty-four hundred, so that the moonlight was to the sun as one to nine hundred and sixty thousand. An observation of Professor Pickering's in 1879, gives the visual ratio as one to three hundred and fifty thousand. Owing to the actinic rays in the sun, the photographic ratio is the highest, as would be expected. Correcting for atmospheric absorption, the photographic ratio of the moon to the sun is as one to seven hundred and sixty thousand.

Armed with the above results from his investigations, Professor Pickering endeavored to photograph the corona of the sun without an eclipse, and failed to produce a distinct impression of it upon the photographic plate. This is entirely in accord with the acts developed above; for from these it appears that to detect a contrast between a coronal ray and the neighboring sky, the light of the latter must not exceed that of the full moon, while in fact it is three hundred times stronger. To use his own words: "In brief, the result of my researches would seem to indicate, first, that without a total eclipse it ought to be impossible to photograph the solar corona; second, having tried, I have failed to photograph the corona, but have obtained the result which theory indicated."

Altogether, these careful experiments of Professor Pickering have developed some of the most interesting facts relating to modern solar photography, and show that America is well abreast of the Old World in the more intricate developments of photographic science.

EDITORIAL NOTES.

Dr. E. L. Wilson, of the *Philadelphia Photographer*, has contributed a most entertaining article to the *Century* magazine for November. The story is about "A Photographer's Visit to Petra." This city is one of the oldest places in the East, and is very difficult to enter, owing to the careful guard kept against strangers by the Arab robbers that infest it. Dr. Wilson and a small party succeeded in entering the city at a great risk of their lives, and also in capturing some excellent pictures of the various interesting ruins that abound there. The story of his adventures is told in forcible and charming language, and we have enjoyed the paper very much. The paper is filled with excellent reproductions upon wood from Dr. Wilson's photographs taken on the spot.

We note in a San Francisco paper, recently sent to us, that a photographer has distinguished himself in the anti-Chinese troubles of our Pacific cousins. Great ingenuity has been displayed by the Celestials to circumvent the authorities in applying the Chinese Anti-Emigration Bill. Mr. I. W. Taber, the photographer of San Francisco, suggested that each Chinaman should leave an inked impression of his thumb when he returned to his native land; and as his having been in America is the only reason upon which he can again enter this country, these thumb-marks are to serve as a signature by which to identify him. As a man's thumb-marks are unlike those of any one else, this method appears to be effectual in excluding Chinese emigrants. The practice is said to be of Chinese origin and of great antiquity, being still in use in the Celestial Empire.

No one at all interested in photography can afford to be without the two English photographic annuals (the British Journal Almanac and the Year Book).

They each contain essays of practical photographic interest from about a hundred of the ablest men and highest authorities connected with the art.

They contain full statements of discoveries and inventions and of new and improved processes, with receipts, tables, etc., and all matters necessary for daily reference.

They contain the most information of value, for the least money, of any publications we know of in the English language.

Report of a curious freak of lightning comes to us from Albemarle Co., Va. A pane of glass in a window of a house in that section, has on it, or rather in it, an exact reproduction of the features of a woman who, while standing at the window, was killed by the "thunderbolt" which so marvelously photographed her likeness on the glass. This is vouched for by the very best authority.

This incident calls to mind another of a somewhat similar nature, the scene of action in this case being in New Jersey. A lad, standing on the threshold of his father's house, was struck down by lightning, and when his body was examined it was discovered that the limbs and leaves of the tree, through which the lightning had passed before reaching him, were photographed in livid colors on his flesh, and this through his clothing. These marks, however, gradually faded away, and at the time of his burial had entirely disappeared.

These facts are not mentioned as worthy of imitation. Even if they were, the difficulty of procuring a subject, to say nothing of the danger of "fooling around" with a thunderbolt, would probably deter the average photographer from making any experiments in this line. It is possible, after all, that old Jupiter, with his fist-full of "jagged lightnings" was the first to indulge in amateur photography.

Now that the long winter evenings are approaching, is the time that the amateur begins to devote his time to the transparencies and lantern slides. No prettier way exists of showing to your friends the results of your summer's work, than by giving select lantern exhibitions made from your own negatives. Every amateur photographer should own a magic lantern.

We saw in one of the daily papers not long ago, a paragraph stating that the eyes of a murdered woman were about to be photographed, in the hope of discovering the features of her murderer impressed thereon. We looked in vain in subsequent issues for an account of the results of the experiment. Do any of our readers know the outcome of it?

We are glad to note that the time for the First Annual Exhibition of the Socity of Amateur Photographers of New York has been definitely set. We are also very much pleased to see that only pictures that are entirely the work of the members are eligible for competition. We believe that an amateur that does not know how to obtain a print from his negatives and then tone and mount it, lacks a knowledge of some of the most interesting features of practical photography. If the New York Society will undertake to develop this phase of photographic work, it will add another to the many reforms it has already inaugurated.

The Photographic Society of Philadelphia will hold an exhibition beginning January 11, 1886. This is open to all photographers, amateur and professional, and will no doubt be a grand success. No building in the United States is better fitted for such an exhibition than the beautiful Academy of Fine Arts in Philadelphia. We hope many of our readers will contribute examples of their work. A full announcement is found elsewhere in our columns.

Prof. C. F. Chandler, of the School of Mines, Columbia College, gave an address before the Grolier Club of this city on November 6th, which was largely attended. His subject was "The Photo-Mechanical Processes Used in Book Illustration," and was illustrated with a handsome collection of examples of the development of photography. These pictures were on exhibition for one week at the rooms of the club.

Our friend, Mr. John H. Thurston, of the Boston Society of Amateur Photographers, writes us that Rule I governing their exhibition has been so modified as to admit prints exhibited before any society excepting their own, but debars those receiving awards at any public exhibition.

The Providence Amateur Photographic Club opened its annual exhibition on October 15th at the rooms of the Art Club. The attendance was very large, and the quality of the work surprised the best friends of the club. We are glad to see from the local papers that much artistic work was shown, and was well appreciated by the public in a large attendance.

THE annual meeting of the Pyro Club of Norwich, Conn., was held recently, and the following officers were elected: FRANK H. ALLEN, *President;* M. A. BARBER, *Vice-President;* CHARLES B. CHAPMAN, *Secretary and Treasurer.* The club was organized a year ago, and has steadily grown into a thoroughly equipped and wide-awake body of amateur photographers.

INVESTIGATIONS ON THE CHEMICAL EFFECTS OF LIGHT.

BY DR. J. M. EDER.

(*Continued.*)

III.—Different Copper Compounds.

Oxalate of copper and sodium forms blue crystalline needles, which will keep for years in the dark. In light it changes after several days (sometimes weeks) to a brownish-black, on the surface to a brownish; it does not change in weight. The light sensitiveness is not very considerable.

It appears remarkable that the analogous potassium and ammonia double salt is unchangeable in light, no analogous example in other compounds being known to me. Dissolved oxalate of copper and potassium is also unchangeable in light. But if the solution should contain ferric oxalate, cuprous oxide will separate after one day's sunning, with which ferrous oxalate will mix some time later.

The light sensitiveness of the so-called Fehling's solution was observed already by Fehling himself in the year 1849.[*] He writes; "It is by all means necessary that copper sulphate, tartrate of potassium and caustic potassium are present in proper proportion; if this is not the case, the solution will decompose without sugar in light pretty soon; in direct sunlight instantaneously."

But the Fehling solution[†] generally used in analytical chemistry is also rightly considered as sensitive to light.

I examined the decomposition of differently concentrated solutions in the light and in the dark after three and one-half months.

Concentrated Fehling's copper solution gave in the light 0.731 grm. cuprous oxide.

Concentrated Fehling's copper solution gives in the dark 0.021 cuprous oxide; difference, 0.710 grm.

Diluted with an equal volume of water, Fehling's solution gives in the light 0.110 grm. cuprous oxide.

Diluted with an equal volume of water, Fehling's solution gives in the dark 0.003 grm. cuprous oxide; difference, 0.107 grm.

With six times the volume of water, Fehling's solution gives in light 0.040 grm. cuprous oxide.

With six times the volume of water, Fehling's solution gives in the dark no precipitate that can be weighed.

The consequence is: 1. The decomposition of the solution in the dark is materially reduced with the dilution. 2. Under the influence of light, about thirty-five times more cuprous oxide will separate in concentrated solutions, and such as have been diluted with an equal volume of water, than in the dark. 3. Strongly diluted solutions are in the dark quite constant, while they still decompose in light.

IV.—Indigo-sulphate of Soda.

Indigo-sulphate of soda is in an aqueous solution very unchangeable to light. Mixed with soda and oxalate of ammonia, the solution is bleached in the sun after two days. The light acts quicker upon a mixture of indigo-sulphate of soda and grape sugar. Still, here is no true action of light; but heat, also, without light, will cause instantaneous reduction.

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[*] Annal Chem. Pharm., 1849. Bd. 72, s. 106.

[†] 34.639 grm. copper sulphate to 500 c.c. water dissolved; 173 grm. Rochelle salts, 125 grm. caustic potash dissolved to 500 c.c.m.

V.—Molybdic Acid.

Molybdic acid, dissolved in diluted sulphuric acid, becomes blue in sunlight, according to Phipson,* but discolors again in the dark. I have shown already in another place that a blue color will only originate in the presence of organic substances, and that the blue color does not then disappear in the dark. Mixtures with sugar become blue in light as well as when the light is shut off (formation of oxide of molybdenum in consequence of a reduction); but in the first case the reduction takes place much quicker.

(*To be continued.*)

THE BICHROMATE DISEASE.

BY DR. JOHN H. JANEWAY, U. S. A.

[Read before the Society of Amateur Photographers of New York, Oct. 13, 1885.]

I HAVE lately been consulted by a gentleman for a peculiar and painful skin affection, with deep and intractable ulcerations, which, upon hearing the history of the case, left no doubt upon my mind that I had to deal with a case of metallic poisoning, and known as the bichromate disease; and I thought that a note of warning to the amateur photographer would not come amiss; as a knowledge of the source of the trouble would simplify the case, lead to a correct treatment, quicken the relief of this painful disease, and successfully cure it. Blyth in his manual on Poisons: their Effects and Detection, says, "That the only salts of chromium of toxicological importance, are the neutral chromate of potash, bichromate of potash and the chromate of lead; that in the chromates of potash† there is a combination of two poisonous metals." Hartshorn's edition of Taylor's Medical Jurisprudence states that there can be no doubt that this salt (bichromate of potash) is a very active poison; that Mr. West has recently published a case, from which it appears that a medical man who had inadvertently tasted a solution of bichromate of potash, suffered from very severe symptoms, resembling those of Asiatic cholera. Again, several fatal cases from this poison have recently occurred in this country, especially in Baltimore, where this salt is manufactured on a large scale.

In Wharton *v.* Stille (Medical Jurisprudence) it is stated: "This salt being extensively used in dyeing, has given rise in several instances to accidental poisoning. Locally applied its action is irritant, causing the workmen who make use of it trouble—some sores and ulcerations upon the hands.

Several fatal cases from drinking a solution of this salt have been reported in this country from time to time. A case of a photographer of Boston is reported, who mistook in the dark room a solution of bichromate for ale, and drank a glass of it. He discovered his mistake immediately and used appropriate antidotes, but his life hung on a thread for a number of days, and it was a long time before he entirely recovered. But it is not with the acute poisoning that we have now to deal, but with a much more insidious, more common occurrence—and often unsuspected—the absorption of the poison in very minute quantities, either by the air passages or the skin of the hand.

Blyth states that the workmen engaged in the manufacture of potassic bichromate, exposed to the dust, have suffered from a very peculiar train of symptoms, and which was first described by Dr. B. W. Richardson in the *British and Foreign Medical Chirurgical Review*, October, 1863, and London *Lancet*, March 11, 1882: "It appears that if the workmen inspire the particles chiefly through the mouth, a bitter and disagreeable taste is experienced, with an increase of saliva. This increase of buccal secretion gets rid of most of the poison, and in that case but little ill effect is experienced; but those who keep the mouth closed and inspire by the nose, suffer from an inflammation of the septum, which gradually gets thin and ultimately ulcerated. Finally the whole septum is in this way destroyed. It is stated that when a workman has lost his nasal septum he no longer suffers from nasal irritation and has a remarkable immunity from catarrh." The same author states that the bichromate also causes painful skin affections; eruptions akin to eczema or psoriasis; also very deep and intractable ulcerations. That these cutaneous maladies start from an excoriation. That so long as the skin is not broken there seems to be little local effect, if any. It is also stated that horses employed in these factories suffer from ulcerated hoofs and sometimes lose them. It is to the statement that an excoriation must exist to produce the injurious effects, that we must pay attention to. That the absorption of the poison through a denuded skin—small though the abrasion may be—is not to be denied, and we believe from experience that frequent exposure to the poison increases the liability to absorption in an increased ratio. For the irritant effect of the salt increases the area of abrasion, and stimulates the absorbants to take up a larger quantity of the poison each time. And it must also be admitted that the poison is absorbed by contact with the delicate mucous membrane lining the air passages, principally the nose; though I must differ with those who think that the poison expends itself there by destruction of the tissues only; for I think that some cases of constitutional disturbances can be clearly traced to the inhaling of the poison in a very finely divided solid state, as dust, and by inhaling the vapors arising from the process of solution. There is a peculiarity with this poison, which I do not find mentioned in any article upon this subject, very similar to the effect of some of the living vegetable poisons, that is, the point of saturation seems to be very far off, if arrived at at all. I mean in those who are affected by the constitutional or cutaneous form of the disease, and not those who have had the disease in a more violent form—as by losing the septum of the nose—and who seem really to have arrived at the point of saturation, and that is the increased liability to the effects of the poison. Let a person once become affected through an excoriated surface, and have the constitutional effects presented, such as eczema, psoriasis, or deep, troublesome, intractable excoriations, either on the hand or in the form of painful, itching, hard, and so-called slow boils in different parts of the body, and he is extremely liable, whenever he works with bichromate, to have another attack; and in each attack it seems to require a much less concentrated form of the poison to produce the characteristic symptoms of this painful disease.

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* Eder's Ausführliches Handbuch der Photographie, 1884. 1 Th., s. 22.

† We believe this should read "chromates of lead."—EDS. OF BULLETIN.

As no one knows his susceptibility to the effects of this poison without experience, or when a presumed immunity from them may cease, it is well to handle this salt with extreme care either in the dry state or in solution. The fine dust arising from the friction of the crystals, inhaled by the nose, even in a very minute quantity, often giving rise to a distressing and obstinate catarrh. An unsuspected abrasion of the skin upon the hand or finger, and especially around the nails, affords a site for absorption when a solution is employed.

Symptoms, in a general way, by contact with the nasal membranes.—A slight tingling with a sensation of heat, followed by persistent sneezing; then all the characteristic symptoms of a sharp catarrh of the head, and which strongly resists all remedial agents—a continuous exposure resulting in destruction of the nasal septum. When this occurs, the person seems to have arrived at a point of saturation, and immunity from further constitutional effects. But, owing to some idiosyncrasy or peculiarity of constitution, or from less exposure, the poison, instead of destroying the tissues, manifests itself in some constitutional form, similar to those produced by absorption through an abraded surface.

Symptoms following from contact with an abraded surface.—A sense of tingling or smarting, followed by heat and soreness at some small spot on the finger or hand. Continued exposure, by dipping the hands in a solution or handling this salt in a dry state, increases the effect, and we have excoriations obstinate in their character. These, followed by the constitutional symptoms, characterized either in the form of eczema or psoriasis on the hands, in the flexures of the joints, or on different parts of the body, resembling, oftentimes, boils, hard and painful, and with little breaking down of their substances by suppuration, etc. The victim experiences frequent crops of them, often without any apparent cause; but errors in diet or sudden changes in temperature frequently seem to induce a fresh eruption. The obstinacy of this disease is characteristic, and the person's life is rendered miserable for a long time by its persistency and liability to recur.

PHOTOGRAPHY AND ART.

BY XANTHUS SMITH.

[Lecture before the Philadelphia Amateur Photographic Club.]

OUR friend, Mr. Clements, has paid me the compliment to ask me to make a few remarks to you this evening upon matters pertaining to the art part of the pursuit of photography, and it is with much diffidence that I comply, for there has been so much writing and talking about art, in its various phases, during the past ten years, that, instead of its being a subject confined to professionals and a few dilettanti, as formerly, it is now pretty generally discussed, and to so great an extent understood, that I can scarcely hope to give you anything new; and then too, it is a subject which is now generally considered does not come under rules, but is governed solely by personal fancy, which is not at all surprising when we see how widely at variance are the views of the most eminent and popular critics; and even artists themselves, owing to their training in one school of art or another, differ so much in their opinions of what constitute merits or defects in works of art, that what I have to say to you must be taken simply for what it is worth as suggestions, and which, if at all in conformity to the views of any of you, may form groundwork for thought and advancement of the subject by you.

There is a good deal of discussion now as to the true position of photography in the fine arts, some making the statement that it is not an art at all; in fact nothing more than a mechanical handicraft. But this, I think, cannot by any means be admitted, for, as it deals with precisely the same subjects as painters do, and has full power in the important qualities of drawing and light and shade, within the sphere to which it is limited, it has the power to make complete and beautiful works of art; and then, from its powers being limited, it does not follow that those who practice it need be any the less on the alert to make the most of those powers. Indeed it might be said, I think, truly enough, that where there are no chances for tricks of composition, or brilliant effects of color to catch the eye, the more training, knowledge, and taste can be brought to bear by any one using the camera as a means of reproduction, the better it must be for himself and his work.

Now all of you who have gone out with a camera to take landscape views, are so well aware of the way in which one is trammeled—by the want of the power which the painter has, to seize upon the essential and leave out all marring features—that I need not dwell upon the difficulties encountered in the way of intervening trees and bushes, common-place buildings, fences and telegraph poles, and the impossibility often of getting a proper point of sight, on account of the ground being too high or too low; but will call attention to some of the essentials which go to the making up of a good picture, so that when a scene in nature, or a group, is found which conforms to these principles, it may be seized upon and the most made of it.

Light and shadow, composition and perspective, are the qualities which we have to deal with, and as photographs are upon flat surfaces, the same as paintings, the photographer, like the painter, should seize upon all the means which he can to make his distances retire and foregrounds advance. There are three principal devices which conduce to this result: the first in importance being linear perspective, a thorough knowledge of which is extremely essential to the painter, for without it he runs into all manner of absurd blunders, all which trouble the photographer is spared, as his lens takes care of his perspective for him, with one drawback, however, which I shall refer to further on.

The next, and a very important one in landscape, is atmosphere. Either moisture in the air, or smoke or dust, which more and more obscures the detail of each receding passage, sending it away, and making each nearer passage, by its increased depth of shadow and detail, marking advance so nicely to the immediate foreground. And, third and lastly, composition, by a skillful use of which objects are gracefully and agreeably disposed, prevented from running awkwardly into each other, and nearer objects prevented from sticking fast to those which are at a greater distance, thereby bringing them forward beyond their proper place.

In relation to linear perspective, there is, as I said, little difficulty for the photographer, provided he makes a careful use of the swing of his camera, and can get to a sufficient distance to prevent too sudden divergence of lines, except in the one particular of the distortion of objects by most of the lenses in use, by which nearer objects are made to appear entirely too large for those at a greater distance. This is a matter about which there is a good deal of discussion at present, and even if I were more thoroughly up in, would cause too much digression to enter upon here; but I will merely say that this distortion hurts much work very greatly, and takes the picture-like or artistic appearance out of it, by giving gigantic proportions to some ugly foreground feature or features, and by dwarfing, taking all the dignity out of fine middle distance and distant passages. Particularly is this the case, I think, with mountain scenery.

Aerial perspective is to be come at

only by working on atmospheric days. Perhaps I attach too much importance to this quality, but I think it adds an immense charm to landscape views, and it is on this account that most English landscape work is so much more picture-like than much done on the continent, especially in the Alps, where, unlike Britain, the air is very clear; passages of distance ten miles off, appearing as a part of what is in the foreground. And in this country too, on account of our prevailing clear air, we have not as yet paid enough attention to atmosphere effects. And if a scene can be found with a number of intervening passages from the foreground to the distance, and taken when there is enough intervening haze to separate each passage nicely, the eye will be gradually led into the scene, and an amount of sentiment and picturesqueness given which would be impossible on an absolutely clear day, when the shadows would be as black, and objects as distinct, miles off as in the foreground. Of course I am not referring now to work done simply as views of places, which come more under the head of the topographical, but to the making up of agreeable works of art.

A variety of means are used, in composition, to lead the eye into a scene, and take away from the appearance of flatness. As the boundaries of a picture are generally square, a scene, in order to be picturesque and agreeable to the eye, should be to a great extent free from unbroken horizontal and perpendicular lines; because, by repeating themselves and also repeating the horizontal and perpendicular boundaries of the picture, they give a stiffness and monotony that will never be so agreeable to the eye as where there are full rounded and sweeping lines, provided, however, that these be not portions of circles; for so much is the eye enticed by variety, that rounded lines running into straight, or broken by angles, or reversed, as in the famous line of beauty, will impress much more agreeably than a monotonous series of parts of circles.

We all know how troublesome unbroken and repeated lines are, when we come to pose a figure or a group out of doors about a house; doors, windows and verandah posts and rails making themselves so obtrusive, that instead of the attention concentrated upon what should be the principal object or objects of the picture, it is bewildered by a confusion of perpendiculars, horizontals, and angles, which is ten to one heightened by another set of angles, in shoulders, elbows and knees; and we certainly would not remedy the matter if we posed our groups against the ends of a lot of barrels piled up, although by so doing we should get entirely rid of regular lines and angles. But if we hang up drapery we get variety of line, or if we can have foliage, or a wall with the shadow of foliage cast upon it, provided we can get a quiet passage back of the principal part of our group, we at once have a variety that is agreeable. And speaking of this quiet passage back of our groups, brings us to a consideration of the important matter of light and dark, a proper distribution of which in a picture goes so much to the making up of its beauty. It is a theme given much attention to by painters, and should be held no less in importance by photographers, as the camera deals principally with, and shows its mastery in, gradations of light and dark. I can say nothing though, I feel, that will be new to you in regard to this, so well aware you all must be of the importance of a proper amount of half-light and half-shadow to prevent harshness; the beauty of some very clear high light and intense shadow, which gives brilliancy; and if these can be brought into juxtaposition in agreeable forms, how the attractiveness and pleasing effect of the picture is heightened. As the photographer has not the power always to arrange these matters though, as the painter has, he is compelled often to trust to chance for catching such effects, and if he makes many failures, he must not be discouraged; for when he makes a successful hit, it is indeed a success, for as it is out-and-out nature's work, it is free from any conventionality which a painter might be accused of, and then an exquisite amount of truth of form and detail is rendered, beyond the reach of painters.

I do not wonder, gentlemen, that you are carried away by this fascinating pursuit, when you may, at an odd moment of leisure, and as a mere pleasing pastime, secure with your camera a beautiful little picture, and so finished in its details, that it surpasses a work which is the result of hours, and even days, of patient labor of the painter.

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[*From American Monthly Microscopical Journal.*]

THE ACTINIC AND VISUAL FOCUS IN PHOTO-MICROGRAPHY WITH HIGH POWERS.

BY JACOB D. COX, LL.D., F.R.M.S.

We find it commonly said that whilst the difference between the visual and the actinic focus is considerable when making photo-micrographs with low powers, it is not appreciable when using high powers. My experience does not accord with this statement, and some notes upon my own experiments may have interest to others.

If the statement had been that a sharp picture may be taken when the object is exactly in focus with a high power, I should not take exception to it, and I incline to think that this is what has been meant. But a sharp picture may be either a positive or a negative of the visual image seen in the microscope, and in my own work so many examples have turned out to be positives when I expected them to be negatives, that I have been led to make an investigation of the subject, in which the evidence tends strongly to show that with our best high-power lenses the image fixed upon the sensitized plate is a positive instead of being a negative, and consequently the paper prints from this are negatives and not positives.

It would be very easy to overlook this difference in a large class of photomicrographs, because in an alternation of dark and light lines, or dark and light spaces, it often matters little which of a pair is light or dark; the picture may be equally clear and satisfactory either way. In the case of a large majority of the microscopic objects photographed, either the positive or negative image would be good enough for the purpose intended; so good that a close examination of the point I am now suggesting would hardly occur to one. This, in fact, was my own experience until, in efforts to get a good picture of the broken edge of fragments of the finer diatoms, my attention was arrested by the fact that the appearances seen by the eye were often reversed in the print from the supposed negative which I had taken. As, in dealing with minute areolæ this often amounted to showing a projection where I had seen an apparent depression, and *vice versa,* it became in effect a failure to photograph what I had seen, and challenged my best efforts to overcome the difficulty. If the illumination of such transparent objects as diatoms were always by a perfectly central beam of parallel rays of light, there would be no practical difference whether they showed light upon a dark ground or the reverse.

But we rarely get such exactly central illumination even after our best efforts to do so. For example, Plate No. 23 of my broken shell series was thus taken with light intended to be strictly central, a diaphragm being behind the achromatic condenser, which had a small circular hole in it, limiting the illuminating rays to the small central portion of the condenser. Yet in one position the central areolæ of the *Coscinodiscus* which it represents, appear as deep cups, whilst, if it be turned around so as to change places of top and bottom, they appear as projecting bosses.

No. 51 of the same series was the first in which I distinctly marked in my note-book the fact that the dots in that diatom, *Mastogloia angulata*, appeared dark in the instrument, but light in the photograph print. The difference of effect was least important in shells which are an even, smooth film of comparatively little thickness, and greatest in those in which the diatom seems to have strongly marked bars separating the lines of areolæ, as in *Pleurosigma Balticum.*

In a number of cases in which the plates were originally taken with a sharp focus upon the view of the shell which I desired, I have taken transparencies from them by contact, and used these last as negatives from which to print the paper prints. I have found that these last are, according to my notes, what the former should have been if there were no difference between the visual and the actinic focus. A few of these have been prepared for exhibition to the society. The prints taken from the second plates are marked "positives" of the originals, and are, in fact, the true representation of the object as I saw it when taking the original photograph. They are No. 66, *Navicula serians*, Kutz., taken with a Spencer $\frac{1}{16}$ objective, balsam angle 125°, with No. 118 as the positive from it.

No. 60, *Pleurosigma Formosum*, W. Sm., taken with a Spencer $\frac{1}{10}$ objective, balsam angle 108°, with No. 122 as the positive from it.

No. 83, *Pleurosigma Formosum*, W. Sm., taken with a Wales $\frac{1}{15}$ objective, balsam angle 82°, with No. 119 as the positive from it.

No. 110, *Pleurosigma Balticum*, W. Sm., taken with a Zeiss $\frac{1}{18}$ objective, balsam angle 116°, with No. 113 as the positive from it.

The objectives are all of the first class, and it is safe to assume that what holds true with them will be found true with any of our best glasses.

In taking the original photographs, I used a plain plate of glass instead of the usual ground glass screen in the camera, and focused by the aid of a Darlot focusing glass.

The examples to which I have referred would seem to warrant the conclusion that in using high-power objectives the difference between the visual and the actinic focus is the equivalent of that between a positive and negative image of the object, when the details have passed a certain limit in fineness. But some experiments, made for the purpose of finding how far the tube of the microscope must be moved to secure the proper actinic focus upon the sensitive plate, have had such unsatisfactory results as make me unwilling to venture any positive conclusion, but content myself with stating the facts above given, until further investigations which I am making shall be completed.

In the course of the experiments referred to, I noticed that the image taken on the plate was apparently of a lower plane in the object than the visual one which I was seeking to get. This was shown, in the diatoms with a convex surface, by the sharper image, in the print or plate, of areolæ nearer the margin of the object than those upon which I had focused. It showed also that the difference seemed to be the same in kind as in the use of low-power objectives, with which it is necessary to raise (withdraw) the tube after getting a sharp visual image of the object. Acting upon this, I tried in several instances the gradual raising of the tube, taking pictures at slightly varying departures from the visual focus, until the image was quite spoiled and blurred to the eye. I made some series of as many as five or six plates, thus progressively varying, but without satisfactorily establishing any point (different from the visual focus) at which the objective should be placed to secure in the photographic image the true characters of the visual one. I was surprised to find at what a distance from the visual focus a sharp image could be taken, but it was not the image for which I was in search. Examples of this sort are among the prints which I will exhibit to the society.

I design to add to my experiments on the subject, the examination of the effect of changing the focus of the focusing glass to correspond with the difference between the visual image of a diatom showing light dots or areolæ and that which shows dark ones. Everybody has noticed that a slight change of focus with a high power produces this change of appearance, and if the focusing glass were adjusted for the image which is complementary to the one desired and then the focusing done in the usual way, the result might be that which is sought. It has at least seemed worth the experiment, but a press of other work has prevented my making a thoroughly satisfactory test of it before the time appointed for our meeting.

[*From the Photographic News.*]

HOW TO SUCCEED IN TAKING GOOD PICTURES ON GELATINE PLATES.—No. IV.

BY S. R. BOTTONE.

By the means detailed in the last two papers, the amateur can form a very good idea of what exposure will give a good picture with his usual apparatus, plates, and conditions of working.

But circumstances alter cases; and it is quite possible that he may not always time the exposure correctly—owing either to excess or deficiency in light, to having changed the make of his plates, or to having been driven by the *restlessness of babies*—and to give an exposure which he dreads may have been too short; or, lastly, by inadvertence, to having given one which he feels must have been too long.

It may also sometimes happen that a friend, who has faith in his superior powers, sends him a plate to develop, without any details which may guide him as to length of exposure given, etc.

We may therefore divide these developments which need control into three great classes, viz.: A, the under-exposed; B, the over-exposed; and C, the unknown.

Beginning with the under-exposed, we shall find that these fall naturally under two heads: those which are so very much under-exposed that the image is impressed only in the high lights; and those in which the image is impressed in all but the very deepest shadows. The former never make *good* pictures; the latter may, by a little coaxing, be made to give passable results.

A.—Having to deal with an under-exposed plate, we pour into a white porcelain dish (or a glass-bottomed one with a sheet of white paper below) a sufficient quantity of fresh developer made in the proportions given before, which I repeat here:

Saturated solution ferrous sulphate, 1 part.
Saturated solution potassium oxalate, 3 parts.

N. B.—The solution *must be saturate;* that is to say, the water used to dissolve the ferrous sulphate and the neutral potassic oxalate must have dissolved all it is capable of dissolving. For this reason it is well to keep stock bottles of each solution, to which sufficient ferrous sulphate in the one, and potassium oxalate in the other, is constantly added, to keep the bottles half full of crystals; the remainder being full of the solution. If not much work is expected, it will be well to place a small crystal of sulphate of copper in the sulphate of iron bottle. This prevents the deposition of the ferric salt; but even this precaution is needless if the solution be used up within a month of making.

Another precaution which must be observed, is to measure out the potassic oxalate first, and to add to that the iron solution, otherwise the liquid becomes turbid through the sudden precipitation of ferrous oxalate. The quantity of solution required for the development of a picture will vary somewhat with the size of the dish used for development, as well as with the size of the plate. The plate must be entirely covered, and for this purpose a quarter plate will require at least one ounce of developer; a half plate, two ounces; and a whole plate, four ounces.

The solution having been poured into the dish, the exposed plate is taken out of the dark back, and *quickly* placed under the solution, gelatine side uppermost. The dish must now be kept rocked continuously, to insure evenness of development, for about five minutes. The high lights will now probably begin to appear as hard black patches. When this takes place, rocking may cease, and the dish should be covered over with a slate or other opaque body, and allowed to develop slowly for another five minutes. If, on examination by transmitted light, the half-tones show sufficient density to print, the development may be stopped by washing; if not, the plate should be returned to the developing dish, again agitated and again allowed to repose for five or ten minutes.

It will sometimes be found necessary to leave a plate for *half an hour* in the developer. No harm will accrue from this, provided the developing dish be kept covered, to exclude any adventitious rays of light. The reason why it is better not to agitate the solution during development (as soon as the plate is thoroughly wetted) is, that the resulting picture is less *hard* if the development be thus conducted. An under-exposed picture has a tendency to hardness, as there are only high lights and deep shadows; but *still* development tends to soften this contrast. If half-an-hour's development should fail to bring out the middle lights, then in all probability the picture has been hopelessly under-exposed. As a last resource, a fresh batch of extra strong developer may be made up as follows:

Saturated solution potassic oxalate, 4 parts.
Powdered ferrous oxalate......... 1 part.

Agitate together for a few minutes, allow to settle, and pour off the clear solution for use.

A picture which will not "come out" under the influence of this developer has not received sufficient exposure to give a negative with any developer.

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WE have only subscribed to the BULLETIN a few months, but would not be without it. The price is within the reach of all, and we consider that photographers and artists alike have a journal well suited to their every want. Wishing you every success.

Yours very truly,
KERSHAW & DAVIDSON.

THE NEW DOUBLE-COATED SENSITIVE PAPER.

THIS paper, to which we alluded in our last issue as having been patented by Mr. Roche in this country, and Leon Warnerke in England, has been eloquently described by Mr. Warnerke in the *Mechanic and World of Science*, London, as follows :

The more photography becomes popular, so the more is felt the necessity of some good substitute for glass upon which to take a negative. It will be superfluous to assert that glass, being bulky, heavy, and brittle, is a very inconvenient material for outdoor work. A few more or less successful expedients have been proposed and tried for this purpose since collodion made glass the almost exclusive material for negatives. The question of a substitute for glass has received, however, more development since the introduction of the dry-plate process, and especially after that of collodion emulsion. I myself have been the originator of one of the systems, in which a collodion film, prepared on paper, was used as a temporary support. The introduction of gelatine emulsion for general use, with its great sensitiveness and different physical properties of the vehicle employed, naturally necessitated a different method; and such was provided, either in the shape of a gelatine film pure and simple, or in the shape of a film temporarily attached to the paper, to be stripped off after development when dry, or in the shape of paper covered with emulsion, the image being developed and treated with hot water, as in my patent process. But the gelatine process has made the practice of photography very popular, and added a great contingent of new adepts. These use ready prepared glass plates, and get their pictures by a very simple process of development and subsequent fixing, and they naturally object to the smallest addition to the number of operations involved in the process of obtaining a negative on any substitute for glass. For such persons ordinary plain paper, covered with sensitive gelatine emulsion, answers the purpose, the number of the operations being the same as when glass plates are used. However, prints from such negatives show the grain of the paper.

My new sensitive negative paper, which I have patented, is designed to obviate these imperfections, and to render the quality of the print even superior to one obtained from a glass negative. I take the paper and cover it with gelatine emulsion on both sides. When exposing such double-coated paper in the camera, in the first instance, light will act on the front surface next to the lens; then, penetrating the paper, it will act also on the back surface. When this exposed sheet is immersed in the developer, two negatives, one on each side of the paper, will be produced.

But now let us suppose that the paper itself had some spots, both opaque and transparent; these will have no influence on the front image, but the back image will be influenced by the spots, and in the exact ratio of its opacity. In other words, all the imperfections of the paper will be corrected by the back image, rendering the composite negative perfectly smooth, no matter how coarse or imperfect was the texture of the paper employed.

I now pass round for examination a negative produced on this paper bearing some printed matter. The back image had corresponding transparent characters, and very distinct impression of the texture of the paper; but upon looking through the negative all appeared smooth, and such was also the print. Now it will be intelligible that a print from such a negative composed of the two will be also superior as regard roundness and pluck.

This special paper offers other advantages. It does not curl when dipped into water, and even after very protracted washing it remains exceptionally strong, bearing an enormous amount of handling without cracking. It appears as if it was not affected by water at all; in fact, if you examine a wetted negative, you will observe that to the touch it does not seem at all like paper, but like oil-cloth or leather.

The development of this paper is precisely like that of ordinary glass plates, preferably with ferrous oxalate, in order to avoid any pyrogallol stain. After fixing and washing, it is advisable to pass the negative through an alum bath, to which has been added a few drops of sulphuric acid. Hydrochloric acid must not be used. This will bleach the paper if it has become discolored with the iron oxide after long development. The finished negative can be dried on glass previously rubbed with talc, or simply by suspending it; but in this last case it will not be very flat when dry, and it is necessary to damp it again very slightly and to put it between sheets of blotting-paper, and submit it to pressure between the pages of a book. After a very short pressing it will come out quite smooth, and will remain so, if kept dry.

OUR ILLUSTRATION.

With this issue we present our readers with an illustration made by the beautiful process of photo-mechanical printing, "the Indo-tint method." The negative was made with a Dallmeyer lens, and for fine detail and delicate definition leaves nothing to be desired. We must congratulate Mr. Joseph T. Low, who made the negative, upon his success. It is rare that we see such fine work upon dry plates.

THE ST. LOUIS EXPOSITION.

St. Louis, Oct. 5, 1885.

To the Editors of the Bulletin.

As the photographers of St. Louis made a very large display in the St. Louis Exposition, I thought I would make a note of it for the Bulletin.

John A. Scholten has a very large and very artistically arranged exhibit of all styles of photos, from the cabinet to the largest size made with a camera. All are elegantly mounted in heavy gold frames, in walnut cabinets, etc., making one of the best photographic displays that I have ever seen. The artistic merit of the work is, as Scholten always exhibits, of the best. With commendable pride, he calls attention to twenty-one gold and silver medals that have been won by him in photographic contests in the past. He is, no doubt, on the war-path for more. A large display of transparencies, beautifully framed and happily grouped in a good light, is one of the features of his exhibit.

F. W. Guerin is, as usual, to the front with an immense collection of his best work. He is one of the few who never do anything by halves, and the only serious trouble with him is that he never can get room enough. In his exhibit is every style of photograph known to the art, and all of the best. Those who have admired his displays at the different Conventions of the P. A. of A. and at the World's Fair at New Orleans, will be surprised to know that here he excels them all. His photos of children in hazardous, pleasant and comical situations, are one of the features of his display, and attract a great deal of attention from all who enter the art gallery. As well as photos, he also takes pride in showing the honors won in the past, by covering a large space with diplomas, medals, etc. As he is generally a winner, it will take good work to beat him.

J. C. Strauss, whose large work at the Convention in Cincinnati won him so much notoriety, has excelled himself in this Exposition. Twenty-four frames, containing life-size heads, show that he is still making a specialty of large work. Twelve large frames, filled with cabinets, panels and boudoirs, place him, although comparatively young in the business, in the first rank of St. Louis photographers, as the merit of his productions will stand the test with any. The one piece which probably attracts the most attention from the St. Louisians, is a large crayon of the St. Louis Browns, the champion base-ball nine of the American Association.

G. Cramer utilizes one-half of a large room for his display, showing, in all, thirty-eight frames filled with examples of all styles of photographic work; and very artistically arranged, as Cramer knows how. In regard to the merit of the work, nothing better can be said than it was made by Cramer and on the well-known Cramer dry plate. A page of description could not say more.

Well, if I go through each exhibit *in extenso* I will tire you out and not get room in the Bulletin; so will "shorten up." McConnell displays sixteen frames; large heads very good.

Bellis, twenty-one large frames with a general variety of photographs.

Genelli, eighteen frames of large work, four large frames with cabinets, panels and boudoirs, etc., all good; and last, but not least, a fine exhibit of stamp photos.

Boehl & Koenig, eighteen frames, mostly large work, and a few cabinets.

Griff Glover, crayons; three pieces.

Amy M. Stocking, crayons; three fine examples.

If the exhibit of the St. Louis photographers at this exposition is any criterion of what we will have when the P. A. of A. meets in St. Louis, the Music Hall will not be large enough, and Mr. Cramer will have to look out for "more room."

Yours,
Don Quixote.

CAUTION.

Each one of our subscribers will undoubtedly want the three Photographic Annuals:

The British Journal Almanac.
The Photo News Year Book.
Wilson's Mosaics.

We would advise them to send in their orders promptly, to avoid any chance of disappointment.

Last year the edition was exhausted so early, that several hundred customers had to go unsatisfied.

We are told that they will be published a little earlier this year than usual, and our orders will be filled in rotation as received.

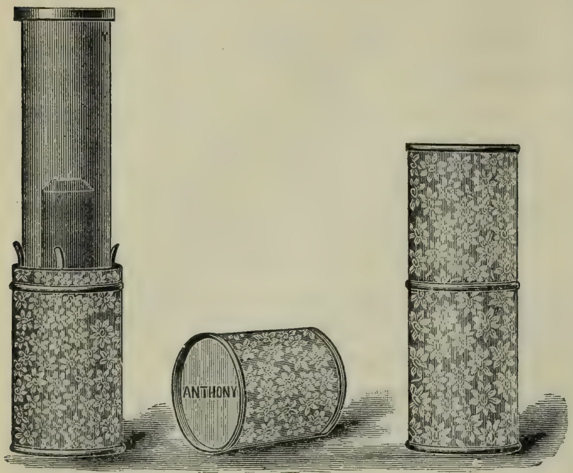
As Webster hath it "First come, first served."

E. & H. T. Anthony & Co.

All communications for the columns of the Bulletin *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

A NEW RUBY LANTERN.

The amateur photographer is usually a tourist, and consequently must have his apparatus in such a form that it can be packed safely for ready transportation. Hitherto, one of the most troublesome things he has had to manage has been his source of ruby light. Many kinds of oil lamps have been devised to furnish non-actinic illumination, and the inventor's genius has been taxed to supply a source of light at once satisfactory for use with rapid dry plates, and of sufficient portability for easy transportation. It soon became evident that oil, as a source of illumination for these lamps, had to be abandoned. No matter how carefully such oil lamps were constructed, the subtle capillary attraction of kerosene and like fluid illuminants, made it impossible to prevent their escape from the tightest vessels. The extreme fluidity of these oils also made it difficult to manufacture vessels sufficiently perfect to prevent leakage. To overcome these difficulties, oil has now been abandoned as a source of light in these portable lamps, and candles have been resorted to as a more manageable and cleanly substitute. Numerous forms of these candle ruby lanterns have from time to time been made and placed upon the market. Many of these have been devised with the idea of making them apparently as complicated as possible, and as a necessity they have been too expensive for ordinary pocket-books. On the other hand there are others so badly constructed that they are not worth anything; indeed, some of these latter are positively injurious to the plates, from the fact that they are not non-actinic, leaking light upon the plates during development. To meet the demand for a good reliable and moderately cheap candle ruby lantern, our publishers have been experimenting for



some months, and have at length produced a lamp which appears to be all that can be desired. We give a cut of this simple and effective device, and will describe its method of construction. Utilizing the method of fixing candles in carriage lamps, the holder for the candle consists of a thin tin tube containing a spiral spring. When the candle is placed in the tube, a slight pressure upon it drives the spring down, and a small cap that fits over the candle wick keeps the candle down and fastens with a bayonet catch.

When the candle is lighted, the spring below pushes upward and constantly keeps the light at the top of the tube, as the material is consumed. This candle tube is supplied with two flat, horizontal disks, one near the top, the other at the bottom, that just fit into a tin box, which serves to make a rigid base for the whole. Over the candle a cylindrical ruby glass chimney is fitted in such a manner that the lower end of it comes just below the inside edge of the tin box that serves for the base of the candle tube; which disposition effectually prevents leakage of light from the lower end of the chimney. Over the top of the chimney a small iron cap prevents leakage of light in that direction. The tin box that serves for the candle base, and another of the same size, fit together, and form a cylindrical package two and one-half inches by six and three-quarter inches that contains all the parts, and weighs twelve ounces. This package is certainly the most compact thing of the kind we have seen to carry all the parts of a thoroughly reliable ruby lantern, and the chimney is most perfectly protected from breakage. For a clean, portable and effective ruby lantern, we have yet to see something better.

OBITUARY.

W. L. ELTING.

We note, with regret, the death, on the 8th of October, of Mr. W. L. Elting, who was for many years in the employ of our publishers.

Mr. Elting was born at Delhi, N. Y., in April, 1826. He was educated at the University of the City of New York, but on account of poor health did not complete the course and graduate.

He started in business in Delhi in 1880, remaining there till 1856, when he removed to Peekskill, N. Y. In 1863 he came to New York City, and entered our publishers' employ.

After a few years he was placed in charge of the manufacturing department, which position he retained until he retired in 1882, since which time he could not do business steadily, on account of failing health, although for a time connected with the United States Customs at New York.

In business Mr. Elting was attentive, industrious, and painstaking.

As a man he was quiet and modest,

kindly and considerate, and endeared himself to all his associates and acquaintances.

He joined the Church in youth, and his life was that of a sincere Christian. In all church or benevolent matters he was much interested, and in both church and society he held important offices.

Mr. Elting leaves a wife and two children to mourn the loss of husband and father.

The immediate cause of Mr. Elting's death was cancer. His sufferings during much of his later life were intense, but were borne with wonderful patience and Christian fortitude.

We are glad to give our expressions of the goodness and worth of our late assistant, and add our sympathy with that of many sorrowing friends.

SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

A REGULAR meeting of the society was held at 1260 Broadway, on Tuesday evening, October 13th, *President* BEACH in the chair.

The *President* announced the usual Wednesday night social meetings, and on the 27th inst. he hoped to have a scientific apparatus to exhibit, for determining the duration of the exposure in the operation of shutters of various kinds.

He called attention to some very handsome photographs, the work of Mr. H. J. Newton, and by him presented to the society, and also to the frame in which they are arranged, presented by Mr. Jos. S. Rich, the treasurer.

He continued: I believe the Chairman of the House Committee has something to say in regard to the coming exhibition.

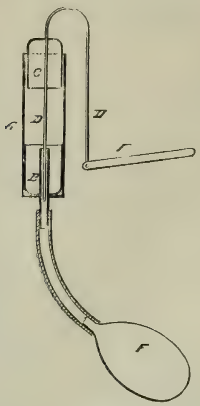
Mr. CANFIELD—There is going to be an exhibition, but just when I do not think has been precisely determined yet. At first it was supposed that about the 27th of this month would give sufficient time to enable persons to get ready for it, but it has been thought best to postpone it until later. It is believed that about the middle of November will be the time fixed upon, but notices will be sent out in ample time, so that every one can prepare for it.

The *President* then called attention to exhibitions to be given by the Boston Society of Amateur Photographers, the Providence Amateur Photographic Association, and the Philadelphia Society.

He stated that he had expected to have on exhibition a new camera, invented by Mr. S. C. Nash, of Pittsburgh, for taking three or four pictures on one plate, or dividing up a plate into as many quarters or different sizes as was desired. He had not received any word from Mr. Nash, and presumed he had forgotten it, or had forgotten to send the instrument.

Mr. FISK—It will be here by next meeting.

The *President*—The next apparatus I have to show is a small drop shutter, operated by a ten-cent pneumatic device, devised by Mr. Grisdale. The novelty of this release is its cheapness, as you cannot buy a pneumatic release ordinarily, I believe, for less than three or four dollars. Mr. Grisdale saw, in a ten-cent pen-holder, an opportunity for making a very cheap pneumatic release. In making the release, Mr. Grisdale took an ordinary nickel-plated patent pen and pencil-holder, made by Faber, which is nothing more than a cylinder of metal three-eighths of an inch in diameter by four inches long, and provided at each end with a punched up screw-thread. In one end is a short tube, with a corresponding thread, holding a short pencil; in the other, a like tube holding a pen. Both the pen and pencil tubes are closed at their rear ends, and when the articles are not in use, these capped ends close the holder and make it easy to carry about. The lead pencil was taken out of its tube, the main cylinder was cut off so as to shorten it, and the closed pencil tube soldered to the lower end, having a small metal tube passing through it slightly up into the cylinder. The pen-holder tube had its screw-thread cut off, and would then easily slide up or down in the top of the main cylinder. The accompanying diagram shows the construction. *A* is the main cylinder, *B* is the pencil tube with the tube passing through its center, *C* is the upper or pen tube inverted, with the screw-thread cut off and passing through its center; soldered to it is a No. 16 iron or brass wire, *D*, which extends down on the inside of the cylinder into the guide tube, *B;* upon the outside it bends down and is attached to the trigger lever, *E*, which lets off the shutter. From the metal tube in *B*, is a flexible rubber tube reaching to a rubber bulb, *F*. Pressure on the bulb compresses the air in the cylinder, and while there is some leakage between the cylinder and cap, *C*, yet it is insufficient to prevent the cap piston from instantly responding by being forced upwards and operating the lever trigger. Releasing the bulb at once draws the cap, *C*, back.



The shutter to which this release was attached was the fly-open door and drop shutter combined, similar to Dr. Janeway's fifty-cent shutter. Mr. Beach operated the release before the audience; its smooth working and simplicity elicited applause. An arrangement was also shown for wedging the shutter on to the lens tube by two pieces of wood on the back of the shutter, which were pressed by a wedge against the lens tube, securing the shutter firmly and adapting it for use on different sized lenses. Mr. Grisdale, for a bulb, took off that used on a common atomizer, and found the rubber tube lying around in the house.

Mr. Beach exhibited a negative made by this shutter and pneumatic release, which was extremely clear and sharp, showing no signs whatever of any vibration.

Continuing, Mr. Beach said: The next article I have to show you is a portable dark-room light, designed by Mr. Grisdale. He says that in traveling around, and having to develop his plates in different places, he often found difficulty in getting a good dark-room light. So he purchased an ordinary ruby argand gas chimney and an ordinary "brilliant" kerosene burner, with a tall, round chimney, such as can be bought at any lamp store, and a wick. This particular burner will fit almost any ordinary lamp, so that all that is necessary to be carried around is the ruby chimney, the wick, and a tall tin tube to fit on the top of the chimney to prevent exit of white light. To use it, all that is necessary is to fill an ordinary glass lamp with oil, and screw on the burner and wick which you carry; then put the ruby chimney over the burner and the tin tube on top of that, and your lamp is complete. The small amount of light coming out of the bottom perforations of the burner is stopped by placing a piece of paper over the side nearest the developing tray.

Another form of portable dark-room light has been invented by Mr. Tisdell. When packed for traveling it is put in a small, round tin box, about two inches in diameter by eight inches long. When the upper half is removed, we see in the lower portion a common tin candlestick, having a hole through its center to hold half a candle, a spiral spring being at the bottom to force up the candle as fast as it burns, in the usual way. In this shape the candle can be carried around as for a white light. When you want a ruby light, all that is necessary is to slip the ruby chimney over the light and place on top a simple metal cap, which allows the heat to pass out, but prevents the escape of the light. I am told that it is apt to smoke a little in its present construction, as the cap is not sufficiently large to let the heat off fast enough. This can be easily remedied.

[Mr. Beach then lighted both candle and lamp, illustrating their practical operation.]

He continued: I have received quite a voluminous letter from Mr. F. D. Bull, of St. Louis, regarding a new method of packing dry plates. This shows that the dry-plate makers are paying some attention to the efforts of our society to improve the packing of plates. He sends me two specimens of packing, and desires me to select that which I think appears to be the best. The first plan consists in packing the plates in two thick card-board boxes, one sliding over the other, like a telescope. In each end of one of these boxes is a corrugated card-board or manilla paper, fastened on to a card-board backing, which is set in loosely, but sufficiently tight to retain it in place. The plates are then packed, back to back, in pairs by a special mechanical device, two to each corrugation, and then the whole dozen, with corrugated strips, slipped into the lower half or smaller box. The cover is next slipped on and the package is complete. In removing the plates, they are easily raised by their edges with the thumb and middle finger. [He then took them out of a box of this construction very easily.] These boxes can be used for preserving negatives by simply gluing the corrugated strips to the ends of the box. If the plates happen to be too thick, as they are sometimes, you are apt to raise two plates out, instead of one. Still the method works very well.

The other method is to pack the plates between corrugated strips, but to lay them in the card-board box flatwise, instead of edgewise. He says, so far, some photographers prefer to have them packed in this way, as they think the plates can be taken out quicker. The inner box is protected by two or three boxes, as you see. [Showing the boxes.] Now you invert the inner box and take out the whole batch of plates, then you remove from one end the corrugated paper strip, which leaves the plates separated at one end by the other strip. You then replace the whole dozen in the inner box, and when you wish to remove a plate for use, simply by a sudden movement like this [operating the box] throw out the upper or unseparated ends of the plates and take one out. It may seem a little quicker, but the first plan looks to me to be the most satisfactory, especially for small sizes. It is claimed that by this method a superior grade of paper can be used, which contains no deleterious material, and that the boxes can afterwards be used to preserve the negatives in.

I have also received an "improved" developer. There is no name given to it, and so I have christened it "Everton's one solution combined pyro developer." (Laughter.) The directions are, that to every two ounces of water you add two drams of this solution, and let the plates develop until the high lights come out fairly well. Then you take the plate out and immerse it in water for half a minute, then put it back in the normal developer and let it finish. I do not know how many grains to the ounce of pyro there is in it, but I have tried it on two or three plates, and my experience has been that it developed a little too slow. I was told by the inventor that that was due to the bromide in the developer, and he sent me another developer without the bromide, and told me to put that in as I needed it.

I have received a very handsome, large framed photograph of the recent Flood Rock Explosion, presented to the society by Messrs. Anthony & Co. The Secretary will read their letter explanatory of the same:

NEW YORK, October 13, 1885.

F. C. BEACH, Esq.,
President of the Society of Amateur Photographers of New York.

DEAR SIR,—We take pleasure in presenting to the society herewith, an instantaneous view of the Hell Gate Explosion, taken by Mr. W. E. Purviance, October 10, 1885, on a 17 x 20 Stanley plate, with a 20 x 22 Dallmeyer rapid rectilinear lens.

The print is made on the well-known N. P. A. albumen paper.

Very truly yours,
E. & H. T. ANTHONY & Co.

Dr. JANEWAY then read a paper on "The Bichromate Disease." [See page 646.]

After the reading of the paper,

The *President* said: In a recent number of the *Amateur Photographer*, I noticed that a new amateur club, the London Camera Club, has just been organized with quite a large backing, and that they have been able to get subscriptions to the amount of over two thousand dollars to start the club, and have elected Captain W. De W. Abney as president. During the meeting, Mr. Stone offered a resolution tendering to the Society of Amateur Photographers of New York the hospitalities of their club, and saying that they had received a similar invitation from the President of the New York Club. The resolution was unanimously adopted, and I think we ought to recognise the organization of this club, and that it is fitting to offer a special motion or resolution inviting them to accept what facilities we have. I will call upon Dr. Janeway to offer such a resolution.

Dr. JANEWAY moved that the President and Corresponding Secretary of the Society be instructed to send a resolution to the Amateur Camera Club of London, in response to the one received from them, extending to them our hospitalities and reciprocating with them. Motion carried.

On motion of Mr. King, a vote of thanks was tendered to Dr. Janeway for the very able and interesting paper he had read.

On motion of Mr. Walker, the thanks of the society were directed to be sent to the Messrs. Anthony & Co. for their kindly attention in sending to the society a picture of the explosion at Flood Rock. Carried.

The *President* stated that the next matter for consideration would be the exhibition of photographs of the Flood Rock Explosion, and the relation of any peculiar experiences which any member of the society had upon that occasion. As for himself, he said: I was located in Astoria on the top of a two-story house, about nine hundred feet, as I estimate, from Flood Rock. I had with me Mr. DuBois, Mr. Darrow, and one or two other gentlemen, and we had a drill there before the explosion, so that we could "let off" just at the right time. My part was to take the first part of the explosion, one gentleman was to take it half-way up, another when it was at its height, and still another the fall. This system operated very well, with the exception that the jar of the explosion on the earth shook the roof so, that one tripod, which happened to be a little unsteady, fell, and as it fell the shutter went off. While that was moving, by sympathy or some other way, it struck the adjoining camera, and knocked that down. But we were successful in securing three or four pictures. Then we had stationed on Blackwell's Island, Mr. Fisk, Mr. Granger, Mr. Boynton, and another gentleman. They were very fortunate in being treated well by the police on the island, so that they had a chance to get on the upper end, as close as was possible. I understand that they had a fine view of the explosion, but the vibration was rather strong. I know that Mr. Fisk secured a very fine picture. At the foot of Ninety-third street, I secured the deck of an ice barge. I arranged with the proprietor that at ten o'clock the barge was to be pushed off from another barge which was lying beside, so that no one could get on beside ourselves, and I understand that by that means our men were not interfered with by the crowd in any way, and I have two or three good views from that point. There were to be one or two gentlemen stationed on a Government steamer. Those I have not heard from. I also arranged to have some gentlemen stationed on Ward's Island; these I have not heard from. So that there are only three points that I am certain we obtained pictures from. There were also some gentlemen stationed at Eighty-Ninth street, on a bluff there. Dr. Janeway was stationed in Astoria, at Hallett's Point. That is the general experience of myself, and I should now like to hear from some others, and then we will pass the pictures around and compare them.

Mr. KING—I took a picture, but found when I got home that my negatives were fogged, and the agent of the plates says that it was because the slide was taken out too long before the explosion. I think that would he a good thing for members to remember after this.

Mr. FISK—I would like to make a correction of the gentleman's remarks. I do not want members to understand that the simple fact of the drawing of the slide too long before the explosion would have that effect. I simply mean that if any diffused actinic light was in the camera, which might not affect a plate for a few seconds, would do so if the plate was subject to it for a longer time; and drawing the slide too long beforehand would probably fog and spoil any plate made as sensitive as instantaneous plates are now made.

The *President*—I would like to state the precaution that I took. I thought it would be safe to see if the camera was tight before I began. So I took the instrument up to a bright window where the sun was streaming in, and set the shutter; then I raised the ground-glass screen, covering my head tightly with the focusing cloth, so as to keep out all possible light. I then looked through towards the lens to see if there was any light. The first thing I discovered was that light came in on one side near the edge of the shutter. Of course I fixed that, so that was tight. After that I found light leaked through where the bellows was secured to the front of the camera, in one or two delicate spires or streams. They were sufficient, if the slide had been drawn a few minutes, to have easily fogged a sensitive plate. After that I noticed the light came through the diaphragm aperture, even with the diaphragm in. Having discovered all these leaks and stopped them, I knew that it was perfectly safe. So that, when I made my exposure I drew the slide, I think, five minutes before the explosion. I tied my handkerchief around the lens tube, thereby protecting the diaphragm slit, and covered the camera entirely with a dark cloth, and was not troubled with any fog whatever. So my advice to any member who is going off to capture any important event, is to see that his shutter and camera are light-tight before he starts. Of course that is very obvious advice, but nevertheless it is good.

Mr. PRAY — I was not at either of the places mentioned, but on the end of the wharf at foot of East Ninety first street, New York side, directly opposite the center of the explosion.

I used on that day the Eastman film instead of plates, and I had only received it the previous day, and proceeded at once (on Friday) to make four exposures with the traps I proposed to use at the explosion. I had expected to use the Prosch shutter, but Anthony's people had not received it at 4 P. M. Friday, so I went home and rigged up my old wooden snap shutter, which my friend, Harry Platt, and I had used at Nantucket last year in our experiments with plates. The head is made of a piece of wood endwise of the grain, and the slide is a piece of bay-wood soaked in hot boiled linseed oil and smoothed off, with circular opening same size as the glass of the 5 B Suter lens. Two rubber bands were used, having, when extended, a pull of a little over eleven pounds. Camera was a Scovill 8 x 10 revolving back, on their usual tripod.

Now you have raised here another and important question—that of the plate being light-struck while the shutter is cocked. My experience is that it is unnecessary. The Eastman film I am told is thirty (30) per cent. faster or more sensitive than the Stanley plate; yet, after the first two of my exposures were made, the slide of my Eastman roll holder was not put in until I had done, but was in the care of my boy of eleven, who was on top of a brick pile higher than my head, with my hat and ground glass, yet I took seven paper film negatives on this sensitive film and no "light-struck plates either."

A Member—How did you cock the shutter if you didn't use the slide?

Mr. PRAY—I expected, as I have said, to use the Prosch shutter, but I am almost always tripped up on these important expeditions. So I used my old shutter and an original idea, a block I made to cover the head of the shutter. This had elastic bands, one of which slips on the forefinger, and the other on the little finger of the left hand. The inside is lined with black cotton velvet, which again has about three-fourths of an inch deep of soft picked cotton, and covers the aperture perfectly while the shutter is cocked.

My first exposure was made four minutes before eleven o'clock, another at eleven. I then cocked and waited until the explosion occurred, 11:14, and took it at its highest point, or just as it commenced to turn. The facility of operation, although I was green with the Eastman film, was such that I had changed the exposed film, cocked the shutter, and my second negative was taken before the fall of the column was complete, or the water within 15 or 20 feet of a level of the river. My shutter did not go off with the shock, nor did any cameras tumble over. I had made my third exposure after the explosion, before any shock was felt. People who timed the explosion said it was nearly 50 seconds after the explosion before we felt the first shock, in which time I had made three exposures. We then felt two or three more shocks, some 15 or 20 seconds' apart. At 11:19 I had made a fourth exposure of the boats going to the immediate vicinity of the explosion.

The *President*—I saw a report in the papers that several photographers were obliged to get down from some lumber piles, I think at Ninety-third street. Did you see any of them?

Mr. PRAY—No sir. Professor Newton and I got control of the wharf, and I afterwards got special police permit, and Sergeant Sheehen, of Eighty-eighth street and Avenue A station, detailed four patrolmen to keep us clear, and they did it pleasantly and efficiently. Two or three of us only were members of this society; two professionals were there—in fact I admitted every man who had a camera to the wharf. I think eight cameras were there, and as I was employed by the New York *Sun* to give them prints, I had to leave early and go home, develop, and, at five o'clock that afternoon, I handed to Mr. Bogart, City Editor of the *Sun*, three silver prints, all from Eastman films—one before the explosion, one at its height, and one showing the surface of the river and the old derrick floating.

My negatives were taken with the shutter as described, Suter lens 5 B, stop 16, which is *f*-16.2, focal length of lens 14¼ or 14½ inches, and developed with Newton's standard developer, full strength. If I had been better acquainted with the films, I should have used stop 8, which is *f*-12, same as I used Friday; but the sun was brighter, and I gave the lens and film a severe trial, for I knew if I had anything on the negative I could bring it out with the developer. As I only received notice of this meeting this forenoon, I could not bring the prints, but will obtain them if I can, as I sold part of my negatives.

Mr. MAGHEE—My experience was not very great or pleasant. I was at Eighty-ninth street, and I was nicely treated by the police. They kept the people twenty feet behind us, and the whole of that fence was lined with cameras. My shutter was set off by the explosion, and when I attempted to snap it off myself I found it gone. There were several amateurs there and professionals besides.

The *President*—Mr. King, how was the shock from the boat?

Mr. KING—Oh, it was not very severe.

Mr. GEO. H. COOK—I was at the foot of Ninety-second street, and we came near losing the whole business. The Chester A. Arthur drew up alongside of the barge and stopped immediately in front of us. The captain was finally persuaded to move further up stream, and we got a very fine exposure.

Mr. FISK—I suppose my experience was like that of all the rest. I got a shock. Through the kindness of the president of this society, permission was given us to go on Blackwell's Island. I was afraid, however, after I had made the arrangements with Mr. Beach, from what I saw in the next morning's papers, that the thousand feet limit outside of the explosion was just enough to leave about 500 feet at the end of the island, where the Government vessels would be, and I was rather sorry that I had promised to go to the island; nevertheless I went. I tried to get on the steamer Thomas Brennan, but having no pass (which Mr. Beach had given to Mr. Boynton to hand me) we were allowed admission on the steamer without the pass, and explained matters to the captain; and, after landing, we walked up behind the police to the extreme northern point of the island. There I found Dr. Allen ahead of me. I had taken cameras along of the following sizes: 8 x 10, 5 x 8 and 4 x 5. Mr. Granger had either a 4¼ x 6½ or 5 x 7, and Dr. Allen had one 4¼ x 6½, I believe, and one other camera smaller. I had made up my mind, from what I had seen, that only a long focus lens was going to be of any use. I therefore used a simple single achromatic lens of 17-inch focus. When I got there I found it just about right; the angle was about right, and the focal length enough to get Flood Rock of good size on the screen. Between the time we set up the cameras and the explosion, one of the captains of police, a great, strapping big man, began to detail some of his experiences in the instantaneous process as a photographer, but I need not cite his subjects or experiences. I heard him say: "Why in thunder don't you gentlemen take a picture of all those lunatics?" I looked around and saw "all those lunatics," but I said they were too far off. I went towards them to make a picture. Of course, they all spruced up. I took a picture of them, and went back and replaced the camera for the explosion, and just at that time the barge was about to leave Flood Rock. I supposed it was the last boat to leave the island, and I made a snap at it. The "snap" worked very badly; it fogged the plate. When the last tug was about to leave the island we made exposures, which turned out to be fair. Then we arranged for the explosion. The impression I had was that the explosion was to occur just fifteen minutes after the leaving of the tug. The photographers were all very anxious as soon as the tug had left Flood Rock, and kept saying, every few seconds, "Can't we pull the slide?" I suppose seconds seemed like minutes to them. I waited three minutes and then gave the order to pull the slides. We were just in time. When the explosion went off I was to count 1, 2, 3, 4, for the different ones to make the exposures, but "count" went out of my head, and they all exposed on their own hook, but we got very good pictures. The vibration was very perceptible; there was a decided shock where I was. The plate I used was the Forbes portrait brand, and the development required in the neighborhood of half an hour. I developed with a strong solution of soda and a small amount of pyro to begin with, and afterwards weakened the developer and let it get density. I did not use any bromide. For the pleasure of having enjoyed that trip to the island, I have the honor to present the society with a transparency from that negative.

The *President* exhibited the transparency to the members, and said: From no other view is so large an amount of black smoke shown as there is in this. In all the views I have seen taken from Astoria there is very little of this black smoke compared with what is shown here.

Mr. FISK—I made another exposure after the explosion, and I have from that exposure a distinct smoke rising into the sky, and the decline of the wave as it starts from Flood Rock towards Astoria, and the first row-boat shooting out to get on the rock.

On motion of Mr. Maghee, a vote of thanks was tendered to Mr. Fisk for the picture presented by him to the society.

Dr. JANEWAY—In regard to the vibration at Hallett's Point, it was hardly perceptible where I stood, but down on Sixth avenue, and down to the Battery, and across from there to Governor's Island, it was noticed very perceptibly; almost, in fact, as much as the earthquake we had a while ago. In Astoria, I understood that the shock was not so severe. Up the East River it seemed to extend in a northeasterly direction. There are some very funny stories going about in regard to this tremor. I understand that in a scientific and collegiate institution not very far from here, where they were making experiments to test for the shock, that about 11 o'clock and a few seconds, they discovered a very perceptible agitation of the mercury in the mercury basin. They were satisfied that the shock had extended to there, and they timed it and telegraphed to know what was the exact time that the explosion had taken place. They were answered that it had not taken place yet.

Dr. ALLEN—I was on Blackwell's Island, but dropped my shutter overboard. It was recovered for me by a row-boat and I dried it in the sun. It stuck on the critical exposure, so that I had no success. With reference to the severity of the shock at Astoria, I know of one house where it knocked down the ceiling in one third-story room; also a picture from the wall in another. Water was splashed over the sides of a mug on a wash-stand, second floor, and some books fell from the parlor table. The shock at Blackwell's Island, I found was rather severe.

The *President*—I think that Dr. Janeway is wrong, when he says the shock at Hallett's Point was scarcely perceptible. I was in Astoria, only a short distance from the Point, and it shook the house very perceptibly.

Dr. JANEWAY—Somebody was a little behind me, and I asked if he felt the shock, and he said he did not.

Dr. ALLEN—The reason may be that Hallett's Point is made ground. I remember the time when it was all meadow about there.

Mr. FISK—Has Dr. Janeway any pictures?

Dr. JANEWAY—I have got one.

Mr. DUBOIS—I can corroborate the president in regard to the shock, and my camera was shaken, for when it came my turn to make the exposure and I pressed the ball, nothing came of it; that is, the shutter had already gone off. I know I did not touch it off. I know that the roof under me shook quite perceptibly, and I know that the shutter was touched off by the shaking of the building. It also knocked two of the cameras down. It was a sloping tin roof, and when the shock came it lifted the tripod and two of the cameras went down; as one of them went down (Mr. Darrow's), he snapped the shutter, and he has the result which he will show you. I succeeded in getting very good pictures, both before, during and after the explosion.

The *President*—I will now show the pictures. First we have a picture by Mr. Apgar, who was at the foot of Ninety-second street on the barge. He is unable to be here to-night, and sent me this proof. This picture is intended to show us the water as it is about to fall. You see that it gives a very good general view of it.

The next picture passed around was a broadside view from Astoria, by Mr. Frank DuBois. Regarding it Mr. Beach said: When we got up on this two-story building at Astoria, we found it was impossible for an ordinary lens to take in the whole of the great length, but Mr. DuBois carried with him a wide angle lens, and he therefore secured a picture of the explosion which is quite extensive. It takes almost the whole of the explosion in broadside, close up. There appears to have been a peculiar appearance in the explosion—two towers, apparently at each end, which appear to be widely separated when viewed from Ninety-second street, and close together from Eighty-ninth street.

Other pictures by Mr. Beach, Mr. Ripley, Mr. DuBois, and Mr. Darrow were then passed around, showing the explosion, also as it looked before and immediately after.

Mr. Beach stated that in the *Scientific American* of that week, there were engravings of the explosion from pictures made by Mr. Darrow, Mr. Ripley, Mr. DuBois, and himself.

He then exhibited an enlargement made on gelatine paper of the explosion, made from a 4 x 5 negative, which had been squeegeed, face down, while wet, upon a sheet of glass, for the purpose of drying it with a gloss. As no talc had been rubbed on the glass, and the alum not used to harden the film, the gelatine stuck to the glass, and he was compelled to bring the glass and all to show it.

The exhibition of the pictures being over,

The *President* said: I promised the proprietors of the Knickerbocker Ice Co. that they should have a copy of the pictures we took from the barge. I would also like to present General Newton with a series of pictures taken from the different points, as he was so kind as to give me special permission to get through the lines at Hallett's Point, and I think the members should also be willing to present good photographs from each one of their negatives to the society, so that they may be preserved as mementoes of the occasion, and I think it would be proper for somebody to make the motion.

Mr. FISK—I move that each member be requested to furnish a print from their negatives of the explosion for the society. Motion carried.

Mr. DUBOIS moved that each member of the society who took pictures of the explosion, whether good or bad, present one copy of each to General Newton. Motion carried.

The *President*—I think that a special vote of thanks should be given to General Newton for his kindness.

Mr. WALKER—I think that should be very carefully drafted.

The *President*—I appoint Mr. Walker a committee of one to do so.

Dr. PIFFARD—I desire to exhibit a new test paper for testing the alkalinity of the toning bath. It is an ordinary piece of white blotting-paper soaked in an alcoholic solution of phenol-phthalein. On immersion in an alkaline fluid it immediately turns a bright scarlet, and is much more sensitive than litmus paper commonly used. The change of color is much more striking than in the case of litmus, and I have used it some time in preference to the latter. I am not aware that a test paper of this description has been used before for the purpose indicated, although the reaction in question has been known to chemists for some time. [A piece of white paper was dipped into a solution of carbonate of soda and immediately turned a brilliant red.]

The *President* then gave an account of some experiments he had recently made in development in two solutions, a matter just now attracting some attention abroad. He said: I thought I would try it on some negatives of the explosion, and I have a series of negatives here, marked A, B, C and D, on which I experimented. The way I proceeded was this: The negative marked A, I soaked in a solution of water, 3 ounces, and carbonate of potash, about 35 grains, for five minutes. Then I washed it off and soaked it in a solution of pyro and sulphurous acid, with a strength of about 3 grains of pyro to the ounce. I left it in that solution for about five minutes, but there was not a sign of an image appeared. Then I immersed it in a fresh solution of carbonate of potash and sulphite of soda—35 grains of potash to 3 ounces of water—and immediately the picture came out. Now the pyro solution I poured back into its graduate and kept the negative in the same tray. On examining the pyro, it was, apparently, perfectly clear, just as when I poured it on. After finishing the development, when I poured off the potash, it had a dark sherry color. This is the negative (exhibiting it), and you will notice that the detail is pretty well out in the shadows. The sky is somewhat thin, but that is due to the extreme shortness of the exposure. Including the whole manipulation, I was altogether about 37 minutes developing negative A. I thought I would see if a preliminary soaking in potash would not improve it.

The next negative (marked B) I developed was in a solution of pyro, 4 grains to the ounce, for three minutes, then poured back to graduate. Afterwards the potash solution was put on. Development at once commenced, and the pyro kept clear just the same. That I developed, I presume, in about 20 minutes, and you will notice it is somewhat more dense than the other one. I think the reason is because I put the pyro on first.

The third negative (marked C) is developed in ordinary developer. You see that it is somewhat thinner. I have no prints from that negative as yet. It represents the explosion immediately after it subsided, and you can see the white film, and foam due to gas fumes, rising out of the water.

For the fourth negative (marked D) I simply put a little potash with the first pyro I used. That is a time exposure. You see that it is much more vigorous.

From my experiments, I infer that it is going to be quite an advantageous thing to use the two solutions, because you can use the pyro over and over again, and, therefore, it makes it more economical; and, furthermore, you do not stain your fingers, because the alkali and pyro are not brought together in one solution; and a third advantage would be that the plate only has just the amount of pyro that is necessary to be absorbed by the film.

Mr. TIEMAN—After you soak the plate in the pyro, do you wash it before putting it in the potash solution?

The *President*—No; you must take the tray and pour the pyro off into the graduate. You can have bromide in the alkali and restrain it, if the plate is very much exposed. Then you can go to work on the next plate and pour on your pyro, and then pour that off and pour on your potash. The development may be a little longer than if you use only one solution, but you can use your pyro over and over again for a series of plates. It prevents fogging, and your picture seems to come out clearer and better. Another point is, in case the negative looks too thin, you just pour off the alkali and wash the plate and put on your pyro again, increasing the strength of the pyro solution. You can manipulate with two solutions in that way. If the film is very hard, you want to soak it four or five minutes. If the film is one of the porous, spongy kind, three minutes is sufficient. The negative marked D was developed after the two plates had been developed with the pyro, or the pyro had been poured on back and forth. Then I simply added a little potash and it came up very prettily.

Mr. DARROW—Did you find better results from using the alkaline solution first or the pyro solution first, or did it make any difference?

The *President*—I think the best result is gained by using the pyro solution first. I merely tried using the alkaline solution first to see if, when I put the pyro on, it would bring any picture out. You get more density and get it easier to put the pyro solution on first.

Mr. WALKER offered the following resolution:

"*Resolved*, That the thanks of this society be and are hereby tendered to Brigadier-General Newton, Chief of Engineers, U. S. A., for the courtesy extended by him to the members of this society, in affording them such excellent facilities to photograph the explosion at Flood Rock, Hell Gate, on Saturday, October 10, 1885." Carried.

Dr. WILCOX moved that the thanks of the society be extended to the Commissioners of Charities and Corrections for the facilities extended to the members of the society for photographing the explosion at Flood Rock. Carried.

The meeting adjourned at 10:20 P. M.

NOTE.—The solutions used by Mr. Beach were the No. 1 and 2 of the "Beach Potash Developer," made as follows:

No. 1.—PYRO SOLUTION.

Warm distilled or melted ice water	4	ozs.
Sulphite of Soda (crystals, chem. pure, 437 grs. to oz)	4	"

When cool, at a temperature of 70 deg., add

Sulphurous acid	3¼	ozs.
Pyrogallol (1 commercial oz.)	437	grs.

The concentrated solution will measure 9¼ fluid ounces and be a 10 per cent. solution. 6 grains of pyro to each dram.

No. 2.—POTASH SOLUTION.

Made of two solutions:

A.

Warm water	4	ozs.
Sulphite of soda (crystals, chem. pure, 437 grs. to oz)	2	"

B.

Water	4½	ozs.
Carbonate of potash (chem. pure, 437 grs. to oz)	3	"

A and B are mixed and the combined solution, measuring 10 ounces, is ready for use. One dram contains about 16 grains of potash.

FIRST ANNUAL EXHIBITION OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

THE competition will be confined to members of this society. The exposure and development of the negative, and the printing and toning of all positives exhibited, must be the *bona fide* work of the member sending them.

Exhibits must be sent prepaid and securely packed to "House Committee, care of C. W. Canfield, 1321 Broadway, New York," indorsed "For Annual Exhibition," on or before Saturday, November 14, 1885.

The exhibition will be opened on the following Tuesday evening, November 17th, with an informal reception of members and friends, and will continue open during Wednesday morning and afternoon.

Rules.

A schedule of the pictures sent, arranged in classes according to the printed list, must accompany each exhibit, or be furnished to the committee before the pictures are hung.

The committee may, at discretion, reject all or portions of any exhibit offered.

No picture (except stereoscopic) smaller than 5 x 8 will be received on a single mount. All under this size must he grouped on larger mounts for convenience in hanging. Exhibits may be framed; no unmounted prints will be received.

The society will have the privilege of acquiring a copy of each picture to which a diploma is awarded.

Lantern slides will be shown by the society's apparatus during Tuesday evening, subject to the decision of the committee as to merit.

Printed labels, stating name of exhibitor, subject, lens and plate, must be attached to each print by the exhibitor, so as to read from the front. Blank labels will be furnished on application.

A picture may be entered in several classes, but can obtain only one award.

The committee will not be responsible for loss or damage to any exhibit, but will take all reasonable precautions to prevent such occurrence.

The diploma of the society will be awarded to the best picture in each class, unless, in the opinion of the judges, no one of the pictures entered in a class is considered sufficiently meritorious.

The award will be made by three judges, not members of the society.

Classification.

1. Landscape—Without figures (or animals).
2. Landscape—With figures (or animals).
3. Marine—Surf.
4. Marine—Sail (including steamers or other vessels).
5. Architectural.
6. Interiors.
7. Portrait—Not taken under sky-light.
8. Group—Not taken under sky-light.
9. Cloud effect.
10. Flowers.
11. Animals.
12. Still life.
13. Street views.
14. Expectation. } Composition Subjects.
15. Halt! } Composition Subjects.
16. Rustic Bridge. } Composition Subjects.
17. Enlargement.
18. Stereoscopic.
19. Transparencies (other than lantern slides).
20. Lantern Slides.
21. Photo-Micrographs.
22. Platinotype.
23. Entire collection.

By order of the House Committee,
CHAS. W. CANFIELD, *Chairman*,
DEXTER H. WALKER,
C. W. DEAN.

For further information, labels, etc., address
C. W. CANFIELD, *Secretary*.
1321 Broadway, New York.

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THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

MINUTES of the regular meeting held Wednesday evening, October 7, 1885. The *President*, Mr. Joseph W. Bates, in the chair.

Attention was called by the secretary to the circular announcing the Third Annual Exhibition of the Boston Society of Amateur Photographers, which is to be held about the latter part of November. It was urged that as many members as possible contribute pictures.

The Committee on Membership reported the election of Mr. J. Mitchell Elliot as an active member.

Three new names were also proposed for active membership.

Mr. Wood stated that he had found much difficulty in obtaining a knife for trimming prints which would hold its edge for any length of time. He finally made one from an old hack saw, grinding it to the proper shape and fitting it into a handle. The quality of the steel was such that the edge could be maintained a long time, and it answered for trimming prints on glass better than any knife he had ever used.

Mr. Carbutt exhibited two cabinet pictures taken on his special plates by Mr. George A. Lenzi, in his studio at Norristown. The pair told the story of an amusing episode in the experience of two darkey boys during the water-melon season, and the poses and expressions were as life-like and natural as they could well be. Two lantern slides of the same subjects were also shown, which had been made on "A" plates, developed with pyro and potash, with excellent success.

Some slides were shown by Mr. Burroughs from negatives made by him in New York harbor during the international yacht race.

Mr. Corlies showed some interesting pictures of salmon and salmon-fishing, taken by him on a recent trip to New Brunswick, Canada.

Mr. Wood showed a number of excellent figure studies, including some characteristic pictures of darkey life.

Some good pictures, illustrating certain interesting geological formations in the vicinity of Philadelphia, were shown by Mr. Harden, who also brought with him a number of most successful portraits of children, taken in a back yard, with background and accessories of very simple yet effective character.

Mr. Croughton showed some wet lantern slides which had not been toned after development, for which he claimed greater clearness in the shadows than was usual with toned slides; the toning tending to clog up the shadows to some degree.

Some excellent and interesting slides were shown by Mr. Hazzard; also some by Mr. Hood, Mr. Bartlett and Dr. Jordan.

Adjourned.

ROBT. S. REDFIELD,
Secretary.

EXHIBITION OF PHOTOGRAPHS BY THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

The committee in charge of the exhibition are in receipt of most encouraging responses to the circular issued early in the summer. These responses indicate that a wide-spread interest is being taken in the project, and that large and attractive exhibits may be expected from Boston, New York, Rochester, Pittsburgh, Cincinnati, Cleveland, San Francisco, and from smaller towns in Pennsylvania, New Jersey, Rhode Island, Virginia and California.

Several beautiful exhibits have already been received from England and India, and others are expected; also some from Canada, Nova Scotia and South America.

An exhibition of photographs will be held in the galleries of the Pennsylvania Academy of the Fine Arts, beginning January 11, 1886, and continuing one week.

Pictures will be received only in accordance with the rules and classification given in the circular issued in May, 1885 (see BULLETIN, page 345).

Those proposing to send pictures will please notify the secretary immediately, stating the probable number and size, in order that entry blanks and labels may be furnished them.

All entries must be made in accordance with rule 4, and particular attention is called to rules 5, 6 and 7.

Early notice in regard to transparencies and lantern slides is important, in order that proper arrangements for exhibiting them may be made.

A lantern exhibition will be given upon one evening during the week.

Pictures should be sent to arrive after December 25th, and not later than January 6th.

They must be marked (except when sent by mail), "Photographic Society of Philadelphia, care Pennsylvania Academy of the Fine Arts, Broad and Cherry streets, Philadelphia, Pa."

All transportation charges must be prepaid.

All mail matter should be addressed to the secretary, as below.

Copies of the rules and classification, and any further information required, will be furnished on application.

ROBERT S. REDFIELD, *Secretary*,
1601 Callowhill street,
Philadelphia, Pa.

PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

PHILADELPHIA, Oct. 19, 1885.

THE meeting was called to order by the *President*, Mr. PUSEY, at 8 P. M. A full attendance of members and several visitors were present. Owing to the lecturer for the evening, Mr. Xanthus Smith, having to leave at ten o'clock, it was moved by Mr. Haines that the business part of the meeting be postponed until after the reading of Mr. Smith's paper. This being agreed to, Mr. Smith was then introduced and read a paper on "Photography and Art." [See page 648.]

Mr. Smith's address, which was illustrated by diagrams on the blackboard, was both interesting and instructive, and was much appreciated by the members present. Upon the conclusion of his paper, several slides, after paintings by Birket Foster, Constable, Turner, and others, were projected upon the screen to illustrate points made by the lecturer in regard to lighting and composition. After which there were a number of slides, from negatives by members, for the lecturer to criticise, which he did, much to the benefit of those concerned. Among these slides were some by Messrs. Haines, Clements, Chase, Wilson, Randall, and others. There were also two or three flower subjects, and a beautiful view on the Wissahickon Creek, by Mr. Bartlett, of the *Philadelphia Photographer*.

A vote of thanks was given Mr. Smith, after which he was elected an honorary member of the club.

The regular business meeting was then proceeded with.

W. W. RANDALL,
Secretary.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

MEETING, November 3d, 1885. *President* NEWTON in the chair.

The Secretary reported having received four numbers of the *Photographic Times*, two numbers of ANTHONY'S BULLETIN and two numbers of the *Eye;* also, the "Journal of the Transactions of the Photographic Society of Great Britain," and a package of circulars from the Photographic Society of Philadelphia announcing an exhibition, which is to be opened there on January 11th, and the section is asked to contribute such pictures as it chooses.

The usual vote of thanks for the periodicals received was carried.

Mr. GARDNER, Chairman of the Executive Committee—

Mr. President, Ladies and Gentlemen: The lecture on "The Uses and Abuses of the Stereopticon" by Professor Laudy, which was to be given here this evening, has been unavoidably postponed to the first Tuesday evening in December. In place of this lecture, a lantern exhibition will be given, comprising, among other pictures of unusual interest, the explosion at Hell Gate from different points of view and the international yacht race. These pictures have been contributed by our most noted professional and amateur photographers, and hence the meeting will no doubt be of more than usual interest.

Mr. GARDNER moved that a committee of five be appointed by the chair to see about purchasing a stereopticon for the section, the President to act *ex officio* as chairman of that committee.

Professor L. H. Laudy, Dr. M. N. Miller, Mr. O. G. Mason and Mr. J. B. Gardner were appointed by the President.

The lights were then turned out, and Mr. Mason exhibited views of Hell Gate explosion, Mr. Newton of the yacht race and other views, while Mr. Elmendorf and Mr. Fisk showed views of Niagara Falls and other miscellaneous subjects.

The large hall was crowded with spectators and the exhibition was an exceedingly interesting one.

After the exhibition the meeting adjourned.

Bibliography.

WILSON'S PHOTOGRAPHICS. A series of lessons in photography. By Edward L. Wilson, Ph.D., Philadelphia.

In a handsome square octavo of 346 pages, we have one of the best written volumes on photography that it has been our pleasure to read lately. The author divides his subject into twenty-seven lessons and treats of every conceivable phase of purely photographic work, using a method of description at once plain and to the point. The points in which Dr. Wilson excels are those that refer to the artistic treatment of the subject, and the lesson that discusses this point is the best piece of work of the kind we know of. Beginning with some plain and exceedingly interesting remarks upon the rules of art work, he leads the reader through a number of steps in the study to a realizing idea of the object to be attained in taking a picture. Never in the history of photography has there been a greater need of just such study than at the present day. To the professional photographer we can recommend Dr. Wilson's book as one of those that should certainly be within reach for reference, as it is full of the experience of the best photographers at home and abroad. For the amateur it contains a store of photographic and artistic information we have not found elsewhere, and it will lead him into many interesting experimental regions filled with promises of discovery.

While we do not think Dr. Wilson's volume will please every worker in the photographic art, yet it covers a field so entirely its own, that it should be found in the library of every photographic artist.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—J. S. H. writes:—Will you please let me know, through your correspondence column, the process in use for making the best dry plates; and also if the processes of their manufacture are patented?

A.—Full instructions in dry plate making can be found in Dr. Eder's book, "Modern Dry Plates," issued by our publishers. The processes there mentioned are not patented.

Q.—Amateur Subscriber writes:—Please inform me through the BULLETIN columns:

First.—Formula for best developer, and time required for instantaneous negatives.

Second.—Is a saturated solution of hypo too strong for fixing plates and prints?

A.—One of the best developers for dry plates is "Cooper's" which was published in the BULLETIN at the beginning of this year. See table of contents of early numbers. With the Stanley plates the time necessary to obtain a good negative in a bright light and the lens wide open is $\frac{1}{200}$ of a second. A saturated solution of hypo is entirely too strong; use 1 in 8 for plates and 1 in 10 for prints.

Q.—A. G. writes:—As I understand you are a good chemist, please tell me the difference, if any, between pyrogallic acid sublimed and resublimed. As an amateur, who has gained much practical instruction from the BULLETIN, I look to it to post me.

A.—Sublimed pyrogallic acid, if carefully prepared, is white and pure. The least trace of impurity colors it. When sublimed it is light and easily dissolved. Resubliming is entirely unnecessary and useless, more especially if the material is again packed tightly in bottles. Good sublimed pyrogallic acid is sufficiently light to dissolve readily in water, and resubliming does not help this solubility. The best and only test of the acid for photographic purposes is its pure white color.

Q.—R. L. A. writes:—I have seen somewhere an article which said an amateur whose time was occupied during the day, could amuse himself evenings in taking portraits and interiors by the aid of a piece of magnesium wire. Is such a thing feasible, and would not such a light, the same as an electric light, make very black shadows? If you can give me any points on the process and describe position of wire-light to subject, as well as the kind of plate to be used, length of exposure, etc., I shall be much obliged.

A.—From our own experience with magnesium wire we cannot recommend it for the purpose you mention. We have never seen any good pictures, or even passable ones, made by its aid. It is only useful for making prints on gelatino-bromide paper.

Q.—X. Y. L. writes:—Will you kindly answer me, through the BULLETIN, the following questions:

First.—The process for sensitizing canvas for enlargements, to be afterward painted in oils? *Second.*—Would "eau de javelle" (as recommended in *British Journal* Year Book for 1884, page 113) bleach the photo or change the colors (oils I refer to), or render the picture less permanent—this is strongly recommended as a means of abbreviating the washing of prints?

A.—For a method for sensitizing canvas we must refer you to the "Silver Sunbeam," page 469, which is issued by our publishers. There you will find all the necessary details. Weak "eau de javelle," if used rapidly, would not hurt oil colors or render the picture less permanent.

Q.—L. S. writes:—Can you tell me how to give a glacé finish to silver prints; that is, how to enamel them?

A.—First clean one side of a piece of plate glass, then rub a solution containing 6 grains of wax in 1oz. of benzole over it, and polish the surface slightly with a clean cloth. Now coat with Anthony's plain enamel collodion. When set, put in a dish of water. Have ready, and filtered, a hot solution of fine white gelatine, 20 grains to the ounce of water. Drain the collodion plate, pour on some of the gelatine and lay flat. Now take the damp prints and squeegee them down tightly on the glass, let them *nearly* dry, then paste plate paper on the back and let dry thoroughly. When dry, cut around the edge, peel off and trim. You can mount on heavy card by paste or glue on the edges.

Q.—N. E. G. writes:—We have a negative bath, about three-quarts, 45 grains strength. Has been used to coat not more than four dozen half-size ferro plates. We wish to convert it into a printing bath. What is the most simple way of doing it? 2d. Will such a bath give as good results as one made originally for printing?

A.—Dilute bath with an equal volume of water and heat till it boils, then stop. Filter out the precipitated silver iodide, and then either boil down or add enough fresh silver nitrate to make bath 60 grains to the ounce. This bath should work well.

Views Caught with the Drop Shutter.

MR. JAMES DOUGLASS is doing quite a flourishing business in the line of photographic supplies at Jacksonville, Fla., where amateurs on their tours can always obtain a full supply of Stanley dry plates, N. P. A. albumen paper, and other of our publishers' goods. Professional photographers will also find him ready to supply all their wants at reasonable prices.

WE regret to note that Mr. W. P. BUCHANAN, of Buchanan, Smedley & Bromley, Philadelphia, was recently called home to Ohio by his mother's death. We extend our sincere sympathy.

MR. GEO. RIPLEY, owing to the great demand for his plates, has enlarged his factory. With his increased facilities he can make plates cheaper and has consequently reduced his prices.

MR. E. K. HOUGH gave us a call recently and talked over his interesting travels. He expects to locate in the South for a short time, and may send us something for our readers. We shall always be glad to hear from one so well posted on matters photographic, and that can tell what he knows in a pleasant manner.

DR. E. L. WILSON, of the *Philadelphia Photographer*, gave an interesting lecture on Egypt, at Chickering Hall, New York, on November 10th. We shall say more of this in our next issue.

Mr. David Cooper has been revolving with the Hub lately, and, while there, has added other laurels to his already large collection. He is amongst us again for a time.

Mr. B. L. H. Dabbs, of Pittsburgh, looked in a few days ago and showed us some fine specimens of his work on Stanley plates. In small, as well as large work, he is very good. We shall note his pictures more fully in "Our Picture Gallery."

Mr. E. Long, of Quincy, Illinois, sends us an excellent print of his extensive solar printing establishment. Seven large solar cameras are arranged for work, and the attendants are around looking after the proper adjustments. The condensers vary from ten inches to sixteen inches, and the cameras are all direct printers. Mr. Long has been in the photographic business since 1842, when he made daguerreotypes, and now makes solar prints four by five feet on paper. Such a veteran is a most interesting man to meet.

A fire in Harwood Reed's block, at Newport, R. I., burnt out Holloway's photographic establishment on September 25th.

F. Jay Haynes, the well-known photographer of Fargo, D. T., has established a palace-car studio to be run upon the railroads of the Northwest. It is a most elaborate affair, and speaks well of Mr. Haynes' enterprising spirit.

Plecker, of Lynchburg, Va., has opened a new art gallery in that city, and his photographic department is one of the best in that section. His facilities for work are the best, and he deserves success.

We have received a handsome catalogue from J. F. Indermill, of St. Joseph, Mo. It is filled with fine cuts of moldings, frames, and photographic goods, which later we note are principally those manufactured by our publishers.

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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

ANTHONY'S
Photographic Bulletin.

PUBLISHED SEMI-MONTHLY,
Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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Vol. XVI. SATURDAY, NOVEMBER 28, 1885. No. 22.

THE NEW YORK AMATEUR EXHIBITION.

The most notable event in photographic circles in New York recently, was the first annual exhibition of the Society of Amateur Photographers. Taking into consideration the age of the society, the whole affair was a grand success, and this new feature of their development must be uncommonly encouraging to the officers who have managed it. The room in which the exhibition was held was sufficiently large for the purpose, and the arrangements for lighting the pictures at night were very good, while the large and numerous windows afforded ample light by day. With those who have done so well it is hard to find fault; nevertheless, we must say a word or two of criticism. In the first place all the pictures, except those in some of the frames, are too close together. We are told that this was due to the unexpectedly large number of prints (700) sent in for exhibition. Still something could have been done to prevent this great overcrowding, even at the last minute, and we hope that the house committee will bear this well in mind in the future. Another point that appeared to us to be overlooked, was the character of the mounts of many of the prints exhibited. This is very much a matter of opinion, but it is very rare that a clear white mount is suited to any photographic print. The predominance of white mounts at this exhibition detracted considerably from the enjoyment of those details of artistic work found in many of the prints. We don't say these things in any fault-finding spirit, and would give the gentlemen who managed the exhibition all the praise that they can enjoy.

In another place we have given as detailed a report of the whole exhibition as our space and time will admit. The evident interest of the individual exhibitors was demonstrated by the number and character of the pictures sent in. From the beautiful photo-micrographs of Mr. Atkinson, the exquisite Eastern pictures of Mr. and Mrs. DeForest, and the superb work of Mr. Dumont, to the grand, majestic and magnificent church interior (24 x 36) from a paper negative by Mr. Rockwood, every variety of picture lent its aid to the success of this highly interesting exhibition.

Perhaps a word or two may be said in regard to the means used to produce the pictures. In the matter of lenses, almost every make was represented, Ross, Euryscope, Steinheil, Darlot, and others; but it was noticeable that many exhibitors having these lenses also showed pictures made with the instruments of Dallmeyer. Indeed, this latter lens was in the majority. In regard to plates, Cramer, Seed and Carbutt were well represented, while Stanley appeared to be the favorite. Many exhibitors showed pictures from several brands of plates, and often with equal success in each case; while for instantaneous work, the Stanley gave results that were unsurpassed by any.

Very few records appeared to show the kind of paper used for printing on, but occasionally the ready sensitized variety was noted and showed to good effect. Perhaps the most beautiful examples of printing were those of Mr. Maghee, who exhibited platinotypes. These excelled in every respect anything of the kind we have yet seen. They were simply superb.

Those of our readers who could and did not visit this exhibition, missed a great treat. But we are satisfied that with the experience gained in this effort, the officers of the society will give us something in the future that will make New York proud of its amateur photographers. There is talk of having a spring exhibition, and with the increasing membership, now over one hundred and sixteen, the success of such a project is assured. We advise all our readers who are members to bear this in mind, and if each one sends *something*, it will be still more encouraging to the gentlemen who manage it than the one just closed, of which they may well be proud.

EDITORIAL NOTES.

The *Art Amateur* has recently added a photographic department to its well-stocked pages. This new department is to be under the editorship of Mr. Geo. G. Rockwood, of Union Square, New York. We need not say that these pages of the journal will have an interest for photographers under such able supervision.

"Mosaics" for 1886 is almost ready, and we have been favored with advance sheets. That it contains its usual store of photographic gems, goes without saying. Dr. Wilson is always alive, and has a keen sense of matters of interest for photographers. We cannot give our readers all the good things it contains; but reprint one or two just to give them a taste. Our publishers say they have a large number of advance orders, and we have entered ours to be sure to get a copy without fail.

We paid a visit to the American Institute Fair the other evening, and spent some time in the photographic alcoves. There are a number of excellent examples of the best photographic work made in New York City to be seen on the walls. The whole exhibit is not uniformly good, but the best examples are very fine and thoroughly worth a visit. We shall go again and then say more about it.

At the recent session of the National Academy of Sciences, held at Albany November 10th and following days, Prof. W. H. Pickering read a highly interesting paper on "Stellar Photography," in which he noted that photography was now able to detect stars so far off or small as to be invisible in the telescope.

The lecture given under the auspices of the "International Institute for the Perfecting and Preservation of Anglo-Saxon Weights and Measures," by Dr. E. L. Wilson, of Philadelphia, on November 10th, was upon "Egypt and the Egyptians." The illustrations were from views taken in Egypt and the Nile country. The descriptions by the lecturer were given in his usual flowing style, and thoroughly enjoyed by the audience. We cannot give a digest of the lecture, from lack of space in our columns, but we understand Dr. Wilson will lecture again in New York at an early date, when we advise those of our readers who can go to avail themselves of this opportunity.

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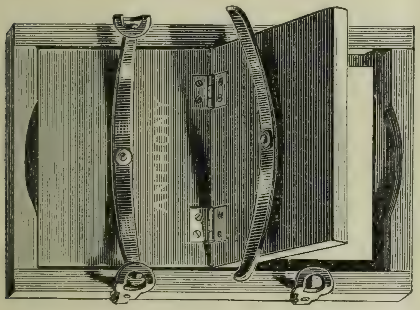
A NEW PRINTING FRAME.

We give below a cut of a new printing frame, which is now manufactured by our publishers. One of the characteristic features of this frame is the device for locking the springs in place. This is accomplished by making the catches under which the spring slips of an annular form; so that, when once the ends of the springs are in position, they cannot readily be dislodged without some pressure. This new feature in printing frames has been covered by a patent. In addition to the above, the new printing frame is light and rigid. Ordinarily these pieces of apparatus are heavy and clumsy, while this new form is made to have the least weight consistent with durability. Although the springs lock firmly into the brass fittings on the frame, yet the whole affair is used with facility and has pleased us very much. The inside of the back of the frame is lined with dark non-actinic material, which obviates the use of dark pads when making lantern slides. We think this also an improvement over the ordinary white flannel backing. Owing to its lightness, our publishers have named it "The Fairy Printing Frame."



INVESTIGATIONS ON THE CHEMICAL EFFECTS OF LIGHT.

BY DR. J. M. EDER.

(*Continued.*)

VI.—*Decomposition of Chlorine Water, Bromine Water, and Tincture of Iodine in light, and the influence of organic substances upon this process.*

The first studies upon this field are from Barwald and Monheim (1835) and have been forgotten*. The former made known that chlorine water did not only decompose in light by itself, but that this decomposition is promoted, when matter comes in contact with chlorine water, which is rich in hydrogen; this being the case with most organic substances, Monheim† admitted that organic substances hasten the photo-chemical decomposition of the chlorine water, but did not believe that the hydrogen of the same had anything to do with it. Monheim experimented with vegetable infusions. Stadeler‡ found that citric acid was particularly quickly attacked in light by chlorine. The photo-chemical reaction of gaseous chlorine upon acetic acid, etc., I will not consider further here, but only those of aqueous solutions of chlorine, bromine and iodine.

First I compared the relative light sensitiveness of chlorine water, bromine water and alcoholic tincture of iodine,§ and then studied the acceleration of the process in presence of organic substances. Chlorine, bromine and iodine were dissolved in equivalent quantities and were exposed to light in the same shaped vessel; another sample was kept in the dark under the same circumstances. After insolation the chlorine which had remained free was titrated in the usual manner with iodide of potassium, starch and hyposulphite of soda. The chloric acid which, according to Pepper, forms, besides muriatic acid and oxygen, did not come into consideration and was disregarded. The analytical determinations were made by me in company with Mr. Schlagenthaufen.

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* Wochenschrift fur die gesamente Heilkunde von Casper in Berlin, October 30, 1835. Bucher's Repertorium, f. d. Pharmacie, 1835, liv., s. 355.

† Bucher's Repertorium, ibid.

‡ Annal. d. Chem. u. Pharm. Bd. III., s. 299.

§ Aqueous tincture of iodine is very unchangeable in light and comparative experiments with chlorine water and bromine water would have been without result.

The concentrated aqueous bromine solution contained 8.000 grms. Br per liter, the diluted 0.800 grm.; chlorine and iodine were dissolved in equivalent quantities. Further, there was decomposed with the chlorine and bromine water one-quarter per cent. of the under-mentioned organic acids.

The Solution of	Lost in the Light.	Lost in the Dark.	Difference.	After the time of
	Per cent.	Per cent.	Per cent.	
Chlorine water, concentrated......	53.9; Cl	6.6 Cl	47.26	30 days.
" " diluted...........	41.87 Cl	4.32	37.55	"
Bromine water, concentrated......	3.5 Br	1.2 Br	1.3	"
" " diluted...........	4.1 Br	2.5	1.6	"
Iodine in alcohol................	0.06 I	0. ..	0.06	"
Chlorine water, concentrated......	5.0 Cl	0. ..	5.0	2 hours in the sun.
Bromine water, "	0.8 Br	0. ..	0.8	2 "
Chlorine water and tartaric acid...	60. Cl	7. Cl	53.	1 "
" " " " ...	100. Cl	24. Cl	76.	2 "
" " and citric acid.....	70. Cl	46. Cl	34.	1 "
" " " " ...	97. Cl	94. Cl	3.	2 "
" " and tartaric acid...	67. Br	2. Br	65.	1 "
" " " " ...	100. Br	3. Br	97.	2 "
" " and citric acid.....	100. Br	5. Br	95.	1 "

This shows that chlorine water decomposes in light six to twelve times quicker than bromine water, and that alcoholic tincture of iodine is about 1,000 times stronger to light (more unchangeable) than chlorine water. Chlorine and bromine water decompose also gradually in the dark, the former always quicker than the latter. In presence of tartaric acid and citric acid the decomposition of chlorine and bromine water is also accelerated in light or when the same is shut off; but here the rapidity of decomposition is due to the influence of light.

Citric acid is affected quicker by chlorine water than tartaric acid in the light, as well as when the same is shut off. With bromine water the decomposition of these acids proceeds in the dark slower than with chlorine water, but in the light it is approximately just as strong as with the latter.

That the chemical energy of the chlorine in the light is more largely increased by the presence of citric acid than by the presence of tartaric acid, finds an analogous example. For instance, chloride of iron and citric acid is more sensitive than chloride of iron and tartaric acid, as proven before.

An alcoholic tincture of bromine discolors also in the dark after a short time (½ to 2 hours). In direct sunlight this discoloration is almost instantaneous.

The rapidity of the photo-chemical decompositions of chlorine water, bromine water and alcoholic tincture of iodine takes place, as mentioned, in the order described; or, in other words, slower in proportion as the atomic weight increases.

VII.—Decomposition of alcoholic chromate solutions in light.

Saturated solutions of bichromate of ammonia in absolute alcohol (in 50 per cent. and in 25 per cent. alcohol) were made, and exposed to light for three years in a sunny place on the window.

1. The solution of bichromate of ammonia in absolute alcohol was discolored after three months, and a green muddy sediment of chromium oxide had formed at the bottom. The liquid contained acetic acid, aldehyde and acetic ether.

2. The solution in 50 per cent. alcohol had during this time given only a little brownish yellow "chromate of chromium," as a precipitate, and even after three years the liquid showed a dark red coloration by the presence of the chromate. Even after that time the precipitate was not totally reduced to chromium oxide.

3. The solution in 25 per cent. alcohol was similar to the 50 per cent. one, but was still further behind in decomposition after three years. It shows that in this case the deoxydation of the bichromate in light was accelerated by the alcohol, as is the case with nitrate of uranium and chloride of iron, in which, with the increasing proportion of water, the light sensitiveness diminishes. Aqueous solutions of the bichromates are entirely unchangeable to light.

VIII.—Decomposition of Mercurous Iodide in Light.

Mercurous iodide forms a yellow-green powder, which, in regard to light-sensitiveness, maintains a rank beside the chloride of silver. On rubber or gelatine paper, impregnated with mercurous iodide, a picture can be obtained in a few minutes in the sun.

About the course of the photo-chemical process nothing certain is known. According to Artus, a darkening takes place only with the moistened iodide, and it is not iodine, but hydriodic acid, which is developed, from which Artus draws the conclusion that mercurous oxide might mix with the same. According to Inglis it breaks up in air-tight vessels in a few weeks to mercury and particles of iodine.

I produced mercurous iodide by precipitating mercurous nitrate with iodide of potassium and washing with alcohol in yellow light. I put it in glass tubes, of which I filled one with moist air, another one with dry carbonic acid, and a third with nitrogen, after which I closed them air-tight. All three turned black very quickly in sunlight, the absence of oxygen or moisture not detaining the change. The presence of iodine or hydriodic acid I could not prove in even a blackened mercurous iodide that had been insolated for weeks, even by heating to 100° C. and examination of the probably escaping vapors. Alcohol did not extract mercuric iodide from the blackened powder; but a piece of gold leaf was turned faintly white over the powder heated to 150° C., thus giving evidence of the presence of free mercury.

If, therefore, in the decomposition of mercurous iodide in the light, 1, the oxygen and moisture play no role; 2, iodine and hydriodic acid (contrary to Artus) do not become free; and, 3, metallic mercury in minimum traces forms, then there may be a dissociation (division) into mercury and mercuric iodide. But as alcohol extracts no mercuric iodide from the mercurous iodide blackened in the light, it stands to reason that

$$Hg_4I_6 \text{ (after Bollay)}$$

must form.

Then is the decomposition equation for exposed mercurous iodide

$$3Hg_2I_2 = 2\ Hg + Hg_4I_6,$$

that is, it divides into finely separated metallic mercury, which produces the coloration, and dimercuric mercurous iodide. The blue and violet light has here particular effect, as shown by Chastaing.

—*Translated from the original by H. D.*

THE VAGARIES OF DRY PLATES.

BY THOMAS PRAY, JR.—*ex-amateur.*

ALTHOUGH much that is valuable has been written upon this question, there seems to be plenty of ways for experience not as satisfactory as it is interesting, and not always as successful as it is expensive.

The idea still seems to remain in the plate maker's head (or some of that genus) that the amateur (or ex-amateur) or the developer are the main causes of failure and consequent dissatisfaction; and while all this as an excuse *may be* at times, or perhaps in too many cases, really the reason to some extent, yet it does not necessarily follow that it is invariably the reason for all the faults or failures of dry plates to respond to our best efforts or intentions.

There is another idea gaining ground in the minds of the "snap-shutter craze" fraternity, which is, the quicker a plate is in the sensitometer, the more susceptible the plate is to all the lights and shadows, or the more delicate it may be in its gradations. This idea is a thoroughly false one in the writer's experience, based on experiments.

Some curious experience has been added to my practice in the last month. Upon one of the finest of October days some views were to be taken for engraving from. These views included still and running water, high lights and the deepest of shadows, as well as foliage; white buildings and shaded brick ones; two cases of most delightful bridges, including sun, shadow and water. The lenses were a Dallemeyer and Suter, one broad angle the other long focus. Plates chosen were one of the oldest makers, and showing about 16 or 17 Warnerke, all fresh from recent stock. Exposures made fully enough, not over-exposed to any extent. Nineteen exposures were made, and no incident of especial note occurred except one. The first exposure being made, the holder was handed to a lady of the party (for one moment), who innocently opened the slide (to see the picture ?) about one inch, and a second plate was promptly obtained and no more curiosity evinced in that direction. Several decidedly beautiful views were obtained, one or two on the bank of a river, and we arrived safely at home in early evening, and as speedily as possible began development. Those known to be spoiled were chosen first, and developed very slowly with Newton's standard of normal strength; in fact it came up too slow, and, after some modification of the developer, was washed off, put for a moment into an alum solution, washed again, and put into the hypo; meantime the second plate was developed for under-exposure, and, while it came out weak, was by far better than the first. Meantime we had been looking at a new and totally unexpected phase of No. 1; the white bromide had quite disappeared, except in a few places, where a *bright yellow* series of spots (which are still visible) showed so plainly as to make us doubtful as to the hypo. No. 1 was now washed off, and No. 2 put in the hypo, while No. 1 was taken to the white light for better examination. Here the matter was made merely worse, for, aside from the bright yellow spots, the emulsion showed all the effects of "frost-work," "autumn leaves," and all the fantastic forms in plain relief on the face of the film, and a plainly appreciable difference in the thickness of the film, when it was looked down upon or through the glass.

Here was a new defect to us—one never encountered before. The plate was then washed and, when dry, all the markings were all the more apparent, and the bright yellow spots about the size of a pin's head, and in groups of 2, 3, 20, 40, were scattered over different parts of the plate, while the other markings were scattered all over the different portions of different plates.

Five plates only were developed that night in about three hours. A new solution of hypo was made, as also both solutions of the developer; another bottle of pyro obtained of different make, "E A"—Schering's having been used at first—and one of the banished "messes" made up (pyro-potash) again for the next evening's developing.

The plates used were 5 x 8 and 8 x 10, and the emulsion numbers were fifty-eight apart in regular order—all exposed in the same camera, lenses, etc.

The second evening's entertainment was no more successful than the first, and Newton's standard, or pyro-potash, would, and did, persistently bring out the same most aggravating defects, and either solution of hypo would not clear off the yellow spots and the scattered "frosting," and different thicknesses and lack of density run clear through the whole nineteen negatives.

Here was a conundrum—over 160 miles traveled to get "another experiment on the part of a plate maker." Two plates 8 x 10 were left in the box, and these were taken to a person using that "brand" with a request to expose them and tell me what he found in developing. No defect was mentioned. In two days he sent the laconic message, on a postal card: "Two of the meanest dry plates I ever developed. Come and carry off the glass." Upon calling, he had found them all spotted and frosted as well as very slow. On the inside of the box cover was marked, "too slow," in pencil, which the writer had not noticed. The result was nineteen poor negatives for somebody's carelessness. Each one had to be intensified before use, and two or three were so full of hills and hollows that the prints looked as though made under the shade of "brush."

I send you, Mr. Editor, one of the 8 x 10's for your own examination. It seems to me that some responsibility should attach somewhere for such lack of honesty or lack of knowledge in sending out such stuff under the label of "Dry Plates." Some of the negatives have been shown the parties who sold the plates.*

No one to whom these spots and markings have been shown has, so far, been able to assign any cause. The reality, however, is quite too painfully apparent, and it has occurred to me many times that some of the people who make *such* plates or such miserable *make-shifts*, either do not know how to mix an emulsion, or that they don't care what they turn out so long as they get the money for it.

May not some of this frost-work be from wrong salting of the emulsion and an incompatibility of the chemicals during such state of affairs, and a lack of compatibility after the full amount of chemicals are added, and *compatibility supposed to exist?* I am not an emulsionist, but sometimes feel that it would be pleasant to make emulsion of some of the so-called plate-makers, and one which would not call for development by immersion, nor by the limited list of explosives or expletives of which such work is the cause.

It was my intention to have said something of long exposures upon very quick plates for detail—in very poor light and on dark subjects—but this is already too long, and you may expect another infliction shortly.

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* We have examined the plates sent by Mr. Pray, and are at a loss to account for their strange appearance. The marks look something like badly washed emulsion; but this is guess-work.—EDS. OF BULLETIN.

POSING.

BY GEO. G. ROCKWOOD, NEW YORK.

[Read before the Society of Amateur Photographers of New York.]

To formulate or explain the art or methods used in posing the human figure is no easy task. Circumstance, place and subject are ever-varying, and need ever-varying consideration. Since subjects are thus versatile in their presentation, we cannot consider *rules*, but should discuss *principles*. Rules are arbitrary, and if applied to art are met with innumerable exceptions, while principles, if understood, are always flexible, and certain guides to successful results. So, in speaking of methods in portraiture, one can only make suggestions which are covered in the phrase "principle."

In the application of photography to portraiture, we exercise very much the same methods in lighting as would give good results in preparing sculpture for photography, every effort being made to present the most graceful forms and lines, and to avoid that which is commonplace or ungraceful. Form, expression, and characteristics should be considered. It is my own habit to diagnose as carefully the temperament of each sitter as his personal comeliness. To place the quiet, phlegmatic temperament in startling, dramatic action, is as discordant as to pose the nervous, active, sanguine subject in a library reading a book! It is therefore the province of the photographer to present the strongest characteristics of his subjects, avoiding caricature and seeking the most favorable aspect. However plain a person may be, every face has its more or less favorable aspect, and from some view and in some light is comely.

All things in the way of accessories or backgrounds should be subordinated to the *subject* of the picture. If, then, we are making a portrait, nothing in the way of dress, background, or furniture should be of sufficient prominence to divide the interest with the sitter. It is sometimes difficult to manage these subordinate portions of the picture artistically, as the camera copies everything before it with equal distinctness if on the same plane—so it is manifestly the aim of the photographer, or "artist" if he be one, to so place and light, or subdue the lights on the accessories, as to make all subordinate to the principal effect in the picture. Dress has much to do with this. If one is robed in a garment full of strong geometrical figures, the result may be a good picture of the dress with female accessory. Or, in other words, the minor part of the picture becomes more prominent than the subject.

As a rule, the light should fall at an angle of about forty-five degrees upon the subject and from as near a northern sky as possible. If the source of light is distant, or the sky-light is high, it is often necessary to use a reflector to throw a little light into the shadows, which may otherwise be too opaque, and thus render them more transparent. This should be done with great moderation and only when absolutely necessary. Better get transparency of shadow by "timing out" than by reflectors. Many otherwise excellent pictures are spoiled in this way. The work of one of our most famous photographers is distinctive, from the almost audacious use of direct light and disuse of the reflector. Posing and lighting so supplement each other, that I treat them together. Pose means, in a degree, *balance*. So, as we place our sitter under the light, the first effort would seemingly be to so pose or balance the head as to remove all fear of the head tumbling off—or, as another puts it, rolling out of the picture! Then so adjust the camera as regards both light and distance from the subject as to preserve the *perspective* of the head. Such an element exists in portraiture as well as in architecture, and a distortion of perspective in the human figure is almost as disastrous, although not as apparent, as in inanimate nature. A well-considered judgment should be exercised in selecting the height of the camera. As a general guide the camera may be placed in the same relation to the head as is occupied by a painter or artist when painting a portrait—usually on a perfect level with, or slightly below the subject. If the neck is short, this habit adds a little height to the sitter and avoids the appearance of the head sinking into the body, as is so often the case in photographs. The custom with most photographers is to place the camera too high, and with this disastrous effect. Of course, if the neck is abnormally long, lowering the camera would emphasize the peculiarity, and such a happy medium should be selected as would avoid this error.

The size of the head in the picture is at times an important question. In the high foreheads, long, thin faces, large heads, and often small bodies, of a certain type of American women, the large head is peculiarly disastrous; and yet it is almost invariably asked for by this class of sitters! Probably the hope is that they may appear larger. The result is usually a masculine effect. Only the round, full face can bear the least exaggeration in size; hence young children can often be photographed with very large heads, and to their advantage.

Now, while truth should be sought in portraiture, lights can be so managed as to temper justice with mercy; for the thin can be made plump, and the stout person free from grossness. To secure the first, an arrangement of light which might be called a broad Rembrandt effect is the most favorable, viz., arrange the light so as to fall on the short side of the face, with the broad side in half-tint, or shade (not shadow), and let the light come from as low a point as will retain the modeling or delicate forms. On the other hand our plump friend can be placed in the usual portrait light with strong shadows, and thus the full moon be reduced to the more comely oval.

Hence we may say that *all* form is defined by means of light and shade; without contrast all objects would appear flat. There is no other means of distinguishing form in nature or portraiture than by light and shade—a light object is contrasted by a dark, and a dark by a light one.

It it said that "Fools step in where angels fear to tread!" So, often, persons volunteer to accompany friends to the photographer with the design of posing them, evidently thinking that nothing could be easier or simpler than to pose a head, and that there was very little to learn or be taught on the subject; but, if, as Mr. Robinson says, we are to judge by the majority of specimens we see, the art of setting a head properly on its shoulders is not given to all men.

Axioms in art are often more euphonious than truthful. So, having no rules or trustworthy axioms for portraiture, I may summarize my few suggestions as follows:

1. Study both the faults and grace of your subject, and endeavor to conceal the one and emphasize the other.

2. Endeavor by the arrangement of light to secure *effect*. Audacity in the contrasts of light with shade is not an unpardonable sin!

3. Study variety of both pose and effect. Mannerism is as objectionable in photography as in any branch of

art, while originality in treatment is as practicable and interesting as in painting. A recent writer says: "Our subjects and our treatment of them must be emphatically our own; but, nevertheless, every student of art owes it to himself to get what help he can from the study of the works of the great painters who have gone before. His object should be to notice not only how natural appearances have been modified—or, as it is technically called, treated—by painters of acknowledged fame, but also why this was done. No artist who has in him any spark of originality will directly repeat any effect that has already been painted, but an earnest student can only benefit himself by trying in a measure to look at nature from the point of view of the masters of his art."

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[*From the Photographic News.*]

HOW TO SUCCEED IN TAKING GOOD PICTURES ON GELATINE PLATES.—No. 5.

BY S. R. BOTTONE.

B.—We now have to deal with the over-exposed. For this purpose we must have at hand two solutions, viz., weak ferrous oxalate, and aqueous solution of potassium bromide. The stale solution of ferrous oxalate which has been used to develop other pictures (and which should always be set aside in small phials filled to the cork), serves very well for the weak oxalate. Should, however, no stale solution be at hand, the following will be found to answer admirably:

Saturated solution of potassium oxalate	3 parts
Saturated solution of ferrous sulphate	1 part
Mix, then add water	4 parts

Enough of this solution to cover the plate should be poured in the developing dish. Before immersing the plate in this developer, the solution of potassium bromide must be at hand. This is made as follows:

Potassium bromide	2 parts
Water	100 "

If the picture be known to be only slightly over-exposed (say that the exposure has not exceeded twice the normal), no addition need be made to the weak ferrous oxalate except water, should the image appear too quickly. It must be borne in mind that a picture that develops rapidly is nearly always thin, and lacking in contrast. To obtain a good printing negative, the development must not be rapid, but slow and steady.

[In a paper recently written by Mr. Burton, while advocating the use of alkaline pyro, that gentleman speaks about ferrous oxalate giving "pretty" negatives, and then warns his readers not to be led astray by "prettiness" in the negative. "Handsome is that handsome does," holds good for negatives as for people, and no negative is worthy the name of "pretty" unless it will give a bold, vigorous print, with plenty of detail, as well as contrast. All these qualities can be easily obtained with ferrous oxalate as a developer.]

On the other hand, close attention must be paid to the picture during development. The eyes must not be taken off the plate for a single instant, for it is surprising how quickly an over-exposed picture "grays" all over at a certain point of the development. Keeping one's eye on the shadows, as long as they remain clear, any amount of intensification of the high lights may be allowed, until the picture has attained its full printing density. Should, however, the slightest grayness be seen to come over the shadows, then the developer must be instantly restrained by the addition of the bromide of potassium solution in the proportion of 2 drams to each ounce of developer.

This should check the graying at once; if this be not the case, another 2 drams may be added, and the solution kept rocking. This addition will retard the development very materially; nay, may even stop it entirely. If at this point the density be not sufficient, it may be necessary to add (a few drops at a time with continuous rocking) some fresh ferrous oxalate, made of the normal strength, viz., 3 parts of potassium oxalate solution to 1 part of ferrous sulphate. By these means a clear, vigorous negative can be obtained from a plate which has received double the correct exposure.

When the exposure has been very much prolonged—say from 5 to 20 times what it ought to have been—a different mode of procedure must be adopted. To the weak developer above described must be added an equal bulk of the potassium bromide solution *previous* to the immersion of the exposed plate. The image will probably appear very slowly indeed; nay, with such a large amount of restrainer, may require the addition of fresh oxalate to bring it out at all. This is no disadvantage, and it is well not to be in too great a hurry to add fresh oxalate, nor to add too much at a time. A picture thus treated ought to take at least five minutes before it shows the barest outline of an image, and then darken up to full intensity without any veiling of the shadows.

It must be remembered that, although a *thin* negative can be easily intensified by after-treatment, *if the shadows be clear*, and free from deposit, no amount of coaxing will ever produce a good printing negative from a plate in which the shadows are veiled. Intensification in such a case only intensifies the veiling, and the resulting print is as flat and poor as it was before intensification.

The chief point, then, in the development of over-exposed gelatine pictures, consists in restraining the development by means of a weak developer if the picture be only slightly over-exposed, or by means of bromide of potassium added to the developer if the over-exposure is very pronounced, the dose of bromide increasing with the increase of exposure, and in arresting the development by means of a large excess of potassium bromide *directly* the shadows show any tendency to "graying."

The "bromized" developer should not be mixed with the ordinary stale developer after use, but should be set aside in labeled bottles, for plates *known* to be over-exposed.

FIRST ANNUAL EXHIBITION OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS' OF NEW YORK.

THIS exhibition took place in the Sloane Building, Thirty-second street and Broadway, on October 17th and 18th. On the first day the exhibition was only open in the evening, and the society's large room, as well as another twice its size upon the floor below, served to accommodate the large crowd of visitors. On the evenings of both days exhibitions of lantern slides took place, and proved very interesting; the President, Mr. F. C. Beach, working the society's lantern with his usual success. In the exhibition of prints, hosts of good pictures were to be seen and it was difficult among so many fine subjects to choose those that most deserved diplomas. The task of judging the pictures fell upon Mr. G. W. Pach, the well-known New York photographer, and Mr. J. O. Davidson, the marine artist. Such a task is often difficult and liable to ruffle somebody's feelings; but in this case we must congratulate those gentlemen on their success, for we have not heard one dissenting word from their decisions.

In the matter of the pictures themselves, it will be difficult to describe each of the seven hundred prints upon the walls. We shall therefore confine our notice to the more striking ones of some exhibitors and a general description of others.

Mr. and Mrs. Robert De Forest exhibited a fine collection of 8 x 10 prints of Eastern scenes. Among these we noted some gems of the olive trees of Mount Hymettus, near Athens. These pictures were remarkable for their artistic as well as photographic qualities. They revealed the grandeur of those old trunks with knarled limbs in such a way as to make one feel a reverence for them in their antiquity, and an admiration of the vitality that had weathered the storms of ages. So also with the views of Egypt and its temples, in the same exhibit. In these latter there was the same fidelity to artistic feeling. The marvelous effects of light and shade were so beautifully caught, as to make one feel as if the original was there and we were looking through a vista at it. In the same exhibit were a number of fine groups in Eastern life, and some uncommonly fine views of Nile boats and scenes on that dreamy river. This fine collection was for exhibition only and did not compete for diplomas. The pictures were undoubtedly among the best seen at the exhibition.

Mr. L. P. Atkinson, who took several diplomas, showed an unusually versatile genius. Some photo-micrographs told of his skill with the microscope and camera combined, and the results obtained are not excelled, except by the most expert manipulators. A number of enlargements upon bromo-gelatine paper were very soft and artistic. In stereoscopic views he also showed some excellent pictures of New York street scenes, the elevated railroads, and some exceedingly good work in places around High Bridge. Mr. Atkinson must be congratulated upon his success in so many phases of photographic work.

Mr. George G. Rockwood, the well-known photographer of Union square, also lent his aid to the society's exhibition. Although he could not compete with the regular members, from restriction, yet he was generous enough to send one of his latest successes in the photographic art. This was a print from a paper negative, 24 by 36, of a church interior, and was an example of photographic skill that the amateur may take as the goal of his ambition. We cannot commend too highly the kindly feelings that many of our professional photographers feel towards the amateurs, and Mr. Rockwood's hearty good feeling is thoroughly understood and appreciated.

Mr. Gilbert A. Robertson showed a number of portraits and views that were very good. The set of scenes around Mount McGregor were unusually interesting from an historical point of view. Among these were Gen. Grant's arm-chair, the room in which he died, and other objects of interest. Such a collection is extremely valuable and will become more so in the future. A very good view of Flood Rock explosion is also shown in this exhibit. Mr. Robertson's work is sharp and clean, which gives very fine effects in interiors and street scenes.

Mr. F. C. Beach, the president of the society, exhibited a number of pictures of yachts. The work was very good from a photographic point of view, but we rarely see a view upon the open ocean that we can call artistic. Mr. Beach's picture of the Japanese dog was very fine indeed. The life-like attitude, the wide-awake expression on the face, and the exquisite detail in the hair, all added to the enjoyment of looking at the picture. Mr. Beach's pictures were for exhibition only.

Mr. W. H. Gilder exhibited a dozen 5 x 8 prints that were quite artistic, The views were all picturesque and of good artistic qualities. There was not a poor picture among them. The tone of the prints in these pictures was very good; which is not what we can say of many other pictures exhibited.

Mr. R. A. C. Smith sent a handsome frame full of prints for exhibition only. These ranged from 3¼ x 4¼ to 6½ x 8½ in size. They were groups and views, and, like all Mr. Smith's work, were well done and artistic. The Cuban scenes and groups of darkies were finely caught and well brought out.

Mr. H. G. Runkle showed prints from 3¼ x 4¼ to 6½ x 8½, and was particularly happy in his results with landscapes with groups of figures, for which he was awarded a diploma. He also showed an unusually good instantaneous print of a war vessel on which they were firing guns. His pictures of interiors were also finely done.

Dr. P. H. Mason sent seventeen examples of skill, ranging from 4¼ x 6½ to 5 x 8. These were all beautifully chosen as subjects and finely executed photographs. The keen artistic taste in every picture was evident to all who saw them; and the care taken with the photographic work, in order to bring out the beautiful effects of light and shade, reflection and details in foliage, made this collection stand out prominently among the best of the exhibition. In this collection we did not see a faulty picture, and most of them were exceedingly beautiful. Most of the scenes were from among the Highlands of the Hudson, a few only being upon the sea-shore, but all were handled with thoroughly good taste and artistic feeling.

Mr. John E. Dumont, of Rochester, exhibited four frames containing examples of his beautiful work. Mr. Dumont has favored us in the past with some prints of great beauty, and we were glad to again see examples of his fine artistic taste and wonderful photographic skill. In a number of landscapes which he showed there was a beauty that must be seen to be appreciated. The wonderful softness of the effects, the peculiar feeling of rest in these quiet scenes, was really marvelous. The groups also were uncommonly well caught and full of picturesque life. Perhaps the best pictures in Mr. Dumont's collection were those for which he got a diploma—marine views with sails. In these there was that feeling of gentle motion and soft breezes that is so hard to catch in a photograph, and without which these pictures are flat and lifeless. That Mr. Dumont excels in this respect there can be no doubt, from the results shown in this exhibition. The several diplomas carried off by parts of this collection, as well as the entire exhibit, were well deserved.

Mr. F. A. Jackson exhibited several frames of 5 x 8 prints of views, interiors, and architectural subjects. They were all beautifully done, and it is impossible for us to pick out any that did not show fine photographic skill and admirable artistic taste. Mr. Jackson carried off two diplomas, and they were well merited.

Mr. W. H. Bartholomew's collection consisted of cloud effects, interiors, views, and one composition piece. The cloud pictures were finely caught, and exhibited some beautiful effects. In interiors the results were sharp and clear, thus producing some capital pictures from difficult subjects. The composition piece, for which a diploma was awarded, was entitled "Expectation," and was a picture of an old-fashioned little boy selling newspapers. The subject was quite unique and was well caught, the picture having numerous admirers among the visitors to the exhibition.

Mr. Randall Spaulding exhibited his usual skill and good artistic taste in a number of prints and several transparencies. The picture of the colored woman and little girl at the well was very nicely done. The cattle groups with reflections in the water were exquisite pieces of delicate work. The transparencies also exhibited some beautiful effects in reflection. All the pictures shown were of the highest artistic taste.

Mr. J. H. Maghee showed a number of fine instantaneous views in silver prints, and perhaps the finest of these were those that showed the tide upon the sea-shore and various surf effects. But Mr. Maghee's best work was shown in his platinum prints. We have seen quite a number of examples of this work, but for softness and fine, brilliant effects, nothing has met our eyes that would compare with the platinotypes in this collection. The clear, limpid effects in the water, the beautiful reflections, the beauty of the foliage and the wonderful perspective in these pictures were remarkable. A portrait upon linen was also shown in platinum printing, but, although fine, we do not think it equaled the landscape work in this process.

Mr. Franklin Harper had a fine view of an interior, which was very good, but this was all we could find by this gentleman. Perhaps, like some others, he had pictures without any labels on them. This is a point that the committee should look after in the future.

Mr. Francis W. Blake had a picture of a group of cattle that was awarded a diploma, and was a good piece of artistic work.

Charles Muller exhibited a number of 8 x 10 and 5 x 8 views and portraits. The work was nicely done, and well up to the mark in photographic skill; we did not note any one picture that was striking or exceptional in any way.

Mr. Ralph McNeill had a fine frame of twenty-five 5 x 8 prints that were excellent in a variety of phases. In the first place they were beautifully mounted, and with good artistic taste. They were not stuck in the middle of a glaring white mount; but were nicely fitted upon dark mounts a little larger than the prints, and these in turn were arranged in the frame with a maroon background. The pictures themselves were all that could be desired in photographic work and showed remarkable artistic taste. The architectural prints were very fine and received a diploma. The views were gems, and particularly those of sheep grazing, in which some uncommonly fine light effects were well caught.

Our time will not allow us to finish the notice of this interesting exhibition at the present time, so we shall have to wait till the next issue of the BULLETIN. We give below a list of the awards of diplomas.

AWARDS OF DIPLOMAS.

Class 1. Landscape—Without figures (or animals). F. A. JACKSON.

Class 2. Landscape—With figures (or animals). H. G. RUNKLE.

Class 3. Marine—Surf. J. H. MAGHEE.

Class 4. Marine—Sail (including steamers or other vessels). J. E. DUMONT.

Class 5. Architectural. RALPH MCNEILL.

Class 6. Interiors. H. G. RUNKLE.

Class 7. Portrait—Not taken under sky-light. EDWARD M. FRANKLIN.

Class 8. Group—Not taken under sky-light. J. E. DUMONT.

Class 9. Cloud effect. RANDALL SPAULDING.

Class 10. Flowers. C. W. CANFIELD.
Class 11. Animals. FRANCIS BLAKE.
Class 12. Still life. GILBERT A. ROBERTSON.
Class 13. Street views. RALPH MCNEILL.
Class 14. Expectation—(Composition). W. H. BARTHOLOMEW.
Class 15. Halt!—(Composition). F. A. JACKSON.
Class 16. Rustic Bridge—(Composition). DR. P. H. MASON.
Class 17. Enlargement. L. P. ATKINSON.
Class 18. Stereoscopic. L. P. ATKINSON.
Class 19. Transparencies (other than lantern slides). L. P. ATKINSON.
Class 20. Lantern Slides. J. E. BRUSH.
Class 21. Photo-Micrographs. L. P. ATKINSON.
Class 22. Platinotype. J. H. MAGHEE.
Class 23. Entire collection. J. E. DUMONT.

THE APPEARANCE OF THE IMAGE DURING DEVELOPMENT.

BY F. C. BEACH.

[Read before the Society of Amateur Photographers of New York, at meeting of November 10, 1885.]

THOSE who commence the practice of photography are frequently puzzled over the problem of the proper development of the plate, and such questions as "How am I to tell when the development is complete?" "What is the proper time to stop?" "How am I to judge when the details are fully out, and to know when the plate has sufficient density?" are heard on every side.

With a view to enlighten those of you who are in need of information on these questions, I will relate the manner of working which I have adopted, knowing that it is not perfect, but at the same time I have reason to believe it may be of some benefit.

By consulting the various guide books relating to photography, much useful information can be obtained regarding development; but how is a person who never saw a plate developed going to know when to stop? He is told, as soon as the details appear well out, then to stop; but he cannot judge correctly on this point until he has developed and lost several plates. To his mind the details might be out with the shadows all white, or the entire plate might be dark brown, and the film one mass of fog. Either case could consistently occur, and he not be the wiser as to whether they were right or not. Therefore, it seems to me the study of the appearance of the image during development is of special importance to beginners, and more specific details regarding it should be put in our guide books.

Experience is conceded to be the best book. At the same time it is possible to give certain prominent hints, which are sure to be useful to any one.

Having been accustomed to develop, some years ago, under a liberal quantity of yellow daylight, when using the wet process, and then experiencing no trouble whatever in quickly flashing out the image under the old iron developer, I was naturally cautious when I was told that the new gelatine plate would fog under that brilliant light, and that the development must be carefully watched, and certain strict injunctions about admitting white light through the crevices of doors, etc., be heeded. So I obtained some of Carbutt's ruby paper and covered it very carefully over my yellow window.

I was then working under a great abundance of diffused red light, which, according to some of the latest experiments, must have been quite non-actinic, coming, as it did, through yellow-red combined.

To take the exposed plate out from the holder, lay it in the tray (for I had alwa s developed the wet plate by holding it at one corner with my hand) and pour on the prepared developer of iron and oxalate, seemed novel to me at that time. I soon found patience was a prime necessity, and after waiting for five minutes the image commenced to appear.

I imagined the exposure had been too short —that I had overrated the supposed extraordinary speed of the plate—hence I added more iron.

But when I had the plate well developed, the question, arose how am I to tell as to its density? The ordinary advice is to hold it up to a lamp and look through it, but I was using ruby daylight, and had no need of it, and I found it impossible to look through the plate; hence I was all at sea as to density and only judged from the surface opaqueness of the blacks, or what is commonly termed high lights, that it would be right after fixing. And here comes another uncertain element in gelatine plates if the development has been too short, the plate will fix out too thin and the supposed intensity will disappear. How must we develop to know when the plate will fix out right? One person will tell you, continue the development until you can see a greater portion of the image on the back of the film, when you look at it by reflected light on the glass side.

I have found this a very good guide in many cases, even superior to looking through by transmitted artificial light, for you are certain then that every portion of the film that has been affected by the actinic light has been acted upon by the developer, and will remain after the plate comes out of the fixing bath.

You ask: "When this condition is reached, what is the surface appearance of the film?" In a majority of cases, if pyro is used as a developer—which is what I advise—the film will have a slaty-brown color all over, not quite as dark in the deep shadows as in the other portion; but it will be perceptible to the eye. Furthermore, the unexposed edges of the plate behind the rabbet of the holder will perhaps be a very light brown. Much depends upon the length of development as to this, and the quality of the plate. Ordinarily the edges should remain white throughout development, but when they do slightly turn, you need not fear but what you will turn out a handsome, clear negative.

Another will say: "You cannot judge this plate by looking at the back." When the whole surface of the film is well brought out, development should cease, though it appears all white on the back I have had plates of which this statement was true, and have found them more difficult to judge by reflected light regarding their density than any other. Viewing by transmitted artificial light is here a necessity, and is the only way to tell when the development has been carried far enough.

By holding the negative up to a certain standard oil or gas lamp, distant about three inches, for a moment, the eye can quickly judge whether there is any solid detail in the shadows or sufficient opaqueness in the high lights. And for any one using a brand of thickly-coated plates, where diffused ruby daylight is preferred during development, I would advise the employment of a lamp which could be kept burning low, and turned up only as you wished to examine the state of the negative.

By this means you can familiarize yourself with the appearance of the plate in the different stages of development, and soon learn when to stop.

One manufacturer has told me to continue the development, in using his plates, until the white rabbet edges of the plate commenced to turn slightly, reasoning that all the detail that it was possible to bring out was out at that stage, regardless of the appearance of the back of the film. I found this a good guide, but by continuing the development further, though the surface appeared quite dark, I obtained a negative more dense and just as clear.

It takes some experience to tell by the ruby light as it is reflected upon the negative in the developing tray, whether the details fully appear on the surface, for the reason that the light, itself is so poor in illuminating power. Consequently, beginners are often deceived.

The moment the prominent objects appear to be fully out, the plate is at once removed, and, after fixing, the operator is disappointed at finding so much that is missing. My experience is, that it is better to have the image appear at least one-third darker by the ruby light than you think it ought to, in order to secure a good negative afterwards. Sometimes we are deceived by the apparent turning of the rabbet lines on the edges, which is really due to the reflection of the red light from the sensitive film, and to the red color of the developer.

In the development of paper negatives, it seems to be much easier to tell by the surface appearance when it is time to stop, for we have a white background, as it were, similar to the effect of a ground or opal glass behind a transparency, which tends to bring out more the delicate details in the shadows, causing them to be more easily seen than with the ordinary plate. Furthermore, the coating of the sensitive film on the paper is thinner than that usually put on glass, and as the developer acts upon both sides of the film at once, through the paper on one side and direct on the other, a considerable portion of the prominent details of the picture can be seen by looking upon the back of the paper by reflected light when the development is completed. The developer also acts very evenly upon the paper, There is no danger of air-bells or frilling, and it is remarkable with what ease and safety from four to half a dozen or more negatives can be developed in one tray, with one developer at a time.

Supposing from ten to fifteen instantaneous exposures have been made in one day, and it is desired to develop them rapidly. Cut off half a dozen sheets at a time and immerse them one by one over each other in a pan of water, then turn the film sides up, drain off the water; and pour on the developer—weak in the alkali, increasing it by degrees until the development starts. You have the whole matter then under your control, and can examine each negative as leisurely as if you were toning, and you have plenty of time to manipulate the developer to obtain any effects you desire. It was not until I actually tried it, that I realized the pleasure and satisfaction to be obtained in developing these paper negatives.

I made three successive exposures on the same object, using the smallest stop, giving exposures of five, ten and twenty seconds, developing all in one developer in one tray. I commenced by using a small amount of alkali, and when the "*twenty-second*" negative was finished I added more alkali, and brought up the other two to good density. I was therefore surprised and delighted to notice the latitude allowable. Paper negatives can be dried very easily, so as to leave as smooth a surface as glass, after the hypo has been eliminated, by first putting a drop of any kind of oil on the glass and apparently rubbing it off clean with a piece of cloth or paper, then laying upon this prepared surface, face down, the negative, pressing out the air-bells with the finger, or squeegeeing the back with a velvet rubber squeegee, leaving the negative to dry. In place of glass, hard rubber can be used without oil.

Both sides of the glass or rubber can be utilized. When dry, the negative is seized at one corner with the fingers and pulled or peeled off the glass. It presents a beautiful polished surface, which will remain until the paper is either oiled or mounted. I have one or two specimens to show you.

I have recently experimented further with developing by two solutions.

I put two plates in a solution of pyro, four grains to the ounce, for three minutes, then poured it back into the graduate, putting on the alkali. When the development was complete, the plate was too thin in the high lights, so I poured off the alkali, washed the plates with water, and put on the original pyro solution, strengthened up to about eight grains to the ounce. I simply let the plates soak in this pyro solution for half an hour, and, to my surprise, their density had greatly increased, and I obtained two soft, clear negatives.

This experiment leads me to the conclusion that, in developing with two solutions, it is better to soak the negatives for two or three minutes in a very strong pyro solution—as much as twelve grains to the ounce—than a weaker one.

But in case sufficient density is not obtained after the alkali has acted in bringing out the image, we have the satisfaction of knowing that it can be produced, without in the least fogging the plate, by simply soaking the latter for a long time afterwards in the pyro solution.

We thus have a means, perfectly under control, of improving the negative and rectifying any errors which might have been made during the first part of the development.

In conclusion, let me say that the development of the negative is to me, as I know it must be to every sincere amateur, the most fascinating part of our work. Under, or too short, development is usually the difficulty beginners have to contend with. My advice to them is, commence with a weak alkali solution, increase it as is necessary, and take plenty of time to bring out the picture; you will then, allowing that the exposures have been within bounds, undoubtedly succeed.

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[*From Photographic Mosaics.*]

JUST TRY IT ONCE.

W. B. TYLER, SAN FRANCISCO, CAL.

VERY often a delightful view is seen, as in a frame, from a balcony, cupola or window. When such a view can be photographed, the effect is very pleasing and artistic. It is impossible, however, to make such a view with one exposure, for two reasons: First, the foreground requires thirty or forty seconds' exposure, while the distance requires but one or two seconds; and second, very few lenses have the requisite depth of focus to render sharply objects on such different planes. The old method of obtaining such a view (and one which I have successfully followed) was to make two negatives; one of the window or other near objects, giving plenty of time; and then, without moving the camera (except to alter the focus slightly), expose another plate, giving this time a very short exposure. By judicious masking and double printing a harmonious and pretty picture was obtained, though it must be confessed that this method was never *entirely* satisfactory, as the lines of the double printing were apt to show, which injured the effect.

Mr. Woods has devised a new method which has proved a complete success in his hands. After the image has been focused, a small screen or piece of black paper is hung in front of the lens at such a distance that the whole background is entirely blotted out. An exposure is then made for the foreground, the lens capped, the screen removed, and a second exposure made. The resulting negative should print evenly, and be perfectly free from line or blemish.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

SIXTH ANNUAL CONVENTION, JULY 14 TO 18, MUSIC HALL, BUFFALO, N. Y.

G. M. CARLISLE, *Treasurer, in account with the Photographers' Association of America.*

1885.			
January 29.	Received from W. A. Armstrong	$601 44	
July 14–18.	“ “ 194 members, $5 each	*970 00	
“	“ “ 431 “ $2 “	*862 00	
“	“ “ 715 people, 25c. each, admission to Exhibition	178 75	
“	“ “ H. McMichael	1,711 34	
August 4.	“ “ “	110 50	
Sept. 15.	“ “ The Blair Tourograph Company	120 00	
October 21.	“ “ H. McMichael	58 50	
“ 24.	“ “ “	19 00	
“	“ at Buffalo from sale of step-ladder	0 75	
			$4,632 28
1885.			
January 25.	Paid for books, as per voucher	$16 00	
“	“ A. Field & Son for 1,000 notices	3 00	
“	“ for 1,600 wrappers	3 00	
“	“ at Buffalo for blotting-paper, pens, ink and screw-driver.	1 15	
“	“ “ conductor's punch	1 25	
“	“ “ tacks to put up German exhibit	0 06	
“	“ “ cotton cloth (vouchers)	11 32	
“	“ “ step-ladder “	1 75	
“	“ “ messenger boy	0 20	
“	“ “ advertisements in Buffalo papers (vouchers)	7 00	
“	“ “ A. Cutler & Son, carting desks	5 00	
“	“ “ printing 1,000 admission tickets	2 75	
“	“ “ David Tucker & Co., exchange on drafts	1 05	
“	“ Clerk hire, wrapping, stamping and directing 1,600 By-laws	16 00	
“	“ Postage, telegraphing and express to date	29 20	
“	“ Draft No. 1, J. F. Ryder, expense attending Ex. Com.	23 00	
“	“ “ 2, W. A. Armstrong, “ “	53 60	
“	“ “ 3, J. Landy, “ “	39 75	
“	“ “ 6, G. M. Carlisle, “ “	30 00	
“	“ “ 7 and 8, Leo Weingartner, “	36 00	
“	“ “ 4, H. McMichael, on account	150 00	
“	“ “ 5, Scovill M'f'g Co., damage to box at Cincinnati	†56 92	
“	“ “ 9, 10 and 11, H. McMichael, on account	90 00	
“	“ “ 12 and 14, Cyrus Morgan (stenographer)	350 00	
“	“ “ 13, N. H. Baker, use of chairs	80 00	
“	“ “ 15, Edward Hays, carpenter bill	307 78	
“	“ “ 16, G. L. Hurd, report of exhibit	25 00	
“	“ “ 17, Rent of hall	500 00	
“	“ “ 18, John Flanagan, officer who took tickets	4 00	
“	“ “ 19 and 20, H. McMichael, on account	527 93	
“	“ “ 21, Scovill M'f'g Co., die for badges	50 00	
“	“ “ 22, J. F. Ryder, notices to members (reduced railroad fare)	4 50	
“	“ “ 23, J. Landy, expenses to Buffalo, July 1, 1885	30 00	
“	“ “ 24, H. McMichael, on account	25 00	
“	“ “ 25, G. Genert, expense on foreign exhibit	31 00	
“	“ “ 26, W. A. Armstrong, copying members' list of names	3 94	
“	“ G. M. Carlisle, 5 per cent. on receipts	201 54	
			$2,718 69
“	Cash in hands of Treasurer		1,913 59
			$4,632 28

Respectfully submitted,

G. M. CARLISLE, *Treasurer.*

Treasurer's Office, Providence, R. I., October 30, 1885.

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*I stated at Buffalo the number of contributing members to be 634, but upon counting up we found an error in the number on receipt of stubs, which reduced the actual membership to 625.

† This item properly belonged to expense account of 1884.

[*From Photographic Mosaics.*]

DESTINY.

W. H. POTTER, INDIANAPOLIS, IND.

> "In busie man wou'd fine his sorrows more,
> If future fortunes he shou'd know before;
> For, by that knowledge of his destiny,
> He would not live at all, but always die."

AFTER serving nearly four years and a half in the army, I came home in January, 1866, with my last six months' pay and allowances as captain in my pocket. I could have entered the regular army, and should have done so, had not a rumor that President Johnson required of all such applicants, assent to his policy of reconstruction, deterred me. We were at Macon, Ga., and were too well aware of the deleterious effects of that policy on the Southern people to think of sanctioning it.

Here a planter had offered my second lieutenant and myself each $2,500 a year, to be considered as members of his family, and provided with a saddle horse, if we would take charge of his plantations, to secure and manage the freedmen, who would not then submit nor make contracts with Southerners. This offer was rejected.

When I had visited all my relatives and friends, after my arrival home, I did not know what to do with myself. My second lieutenant, who had had experience in Australian gold mines and on sheep stations (as they are called there), and who had come home to fight for his country, was anxious I should go with him to Colorado or California and engage in sheep-raising. But my mother was a widow, had lost three of her five boys in the war, and would not hear of my going away again. She thought I ought to go in business with my brother, E. J., who had the misfortune to board a year in Andersonville prison, but who, fortunately, had got home, and, when I returned, was serving his ninth month's apprenticeship in a gallery. The lieutenant, however, being of a very sanguine temperament, generous and chivalrous to a fault, had inoculated me with the California fever. He and I had accidentally met in the army, and a David and Jonathan attachment existed between us. Finally I determined to go with him, and this conclusion was conveyed to mother, who said: "I have been separated from you all I can bear; I do not expect to live long, and while I do live I shall not be separated from you; if you go I shall sell our home and follow you." I was cut to the quick. She was not able to follow me. In my youthful selfishness I had not thought of my mother's feelings. If ever man had a devout and loving mother I had. At once I saw my duty. The gallery was bought, and my destiny was fixed, although I did not realize it at that time.

I knew nothing of the business; to me it looked as black as Erebus, and as mysterious as the Hebrew sheol; not having any books on the subject, nor knowing where to get them, and considering the subject too fathomless for me, I spent the first year in waiting for something to turn up. Of course the business did not pay, and having by 1867 spent all my ready cash, I had to get up and do something.

Leaving what business we had in charge of my brother, I taught school and studied law (1867-68). Business improving in the meantime, I returned to the gallery in 1870, waited on customers, and pursued my law studies. Trade gradually increasing, the stress of circumstances compelled me to give up law. This was the winter of 1870.

My brother went to the Cleveland Convention, and the stimulus induced us to subscribe for the *Philadelphia Photographer*, and go to reading. I got hold of an old edition of "Hardwich's Chemistry," and, while watching the solar camera, studied atomic weights, and photographic chemistry and optics. I did not read it, but studied it, going through it three times. The mists of ignorance somewhat disappearing, I began to see daylight.

For the first time, the fall of that year (1870), "Mosaics" was bought and read. There was such a simple formula for collodion in it that I thought surely I could make some, and I was specially induced to try because the collodion we were buying ready-made was not entirely satisfactory. The necessary materials were bought, and I set to work. By reading I had become so profoundly impressed with the importance of cleanliness and carefulness that I was almost afraid to touch the bottles. However, I survived the operation, and in a few days found I had excellent success. In the same "Mosaics" were simple directions for making up a new negative bath, and this was tackled next. I was distinctly fastidious about the quality of the ice, which was carefully covered with canvas while being melted. This done it was carefully filtered into bottles, and a few grains of silver put in and then placed in the sunlight. When clear it was again filtered, the silver added, and so carefully acidified and iodized that the first negative came up with that rich bloom so peculiar to the chemically perfect collodion negatives. I felt as proud as a monarch.

Subsequently Dr. Vogel's book, "Pictorial Effect," etc., was bought and studied, but I could not be coaxed, wheedled, nor driven to coat or develop a plate, much less handling the camera, exposing the plate, or making a sitting, I was so afraid that my first attempt would prove a failure, or that some one would laugh at me, or that I would be utterly disappointed in myself. My diffidence could not be overcome under any ordinary circumstances.

This is how I ate my leek: An artist, who had considerable knowledge of photography, induced me to take our view-wagon and outfit, and go with him to a place called Hemlock Falls, fourteen miles away. When we were ready to make the first shot, I was surprised to be informed that I was expected to coat and develop the plates. Knowing my weakness, that I had shirked on many similar occasions before, the artist gave me to understand that I must come to time, or we should go home without a negative. I began to feel ashamed of my want of pluck, and also realizing that failure would be less of a joke than going home from a wild-goose chase, I sailed in and made the attempt. The artist selected the points of view, and I coated, exposed, and developed the plates. Having a perfect bath and collodion, I secured some of the best chemical effects I ever produced. After that I had no trouble about making views, usually going alone.

One would suppose, after the foregoing, I would have no difficulty in screwing up my courage sufficiently to make a sitting, but I had actually to be cornered before I would do it. My first views were made in the spring of 1871, but my first sitting not till September, 1874. I had been in several battles, and had made many charges in jolly good humor, but I had not the courage to face a sitter—at least I thought I had not. Nevertheless, in all this time of hesitation, or want of confidence, with regard to the practical, I dipped into the theoretical as deep as my ability, circumstances and opportunities would permit. To this I attribute what little success I have had in the last ten years, and hope I have laid the foundation for still better things in the future.

Therefore my advice to beginners would be: 1st. To get a thorough knowledge of the theory of photographic chemistry and optics; and then get a thorough, practical knowledge as to their application to the production of pictures. When you have attained this, drop them, so far as experiment is concerned. It is not your duty so much to make fine chemical effects as it is to produce pictures. 2d. To do this make a thorough study of art, and make it the life study. Get out of your swaddling clothes as soon as possible; for, live however long you may, art, the ideal, the spiritual, will demand all your time. Do not allow the impediments—the anise and cumin of our calling—to block your way to the weightier matters, the requirements of art.

[*From Photographic Mosaics.*]

DEVELOPMENT OF INSTANTANEOUS PICTURES.

GARVEY DONALDSON, NEW YORK.

COMPARATIVELY few, either professional or amateur, know that in developing instantaneous or short-timed negatives, if the developer is used very weak, much detail that would be lost with a very strong developer can be brought out, and a much softer and finer effect secured. After the detail is all out, the developer can be strengthened and the lights developed until sufficient intensity is obtained.

I think Mr. G. Cramer was the first to recommend this manner of development, and I adopted it when I first used the then Cramer & Norden plates, and have used it to advantage ever since. I usually commence with the developer about one-quarter strength, and gradually add of the pyro or soda, as required, until the plate is fully developed. When the plates are yellow, I place them, after fixing, in a strong solution of alum, with enough citric acid added to make the solution *quite sour*, say an ounce to a quart of solution. Only a short time is required for this operation, which will clear any plate not hopelessly stained.

PACIFIC COAST AMATEUR PHOTOGRAPHIC ASSOCIATION.

REGULAR meeting of the Pacific Coast Amateur Photographic Association, Thursday evening, October 29, 1885, at the Association Rooms, 318 Pine street, San Francisco. *Vice-President* LOWDEN in the chair.

Minutes of last meeting read, corrected and approved.

The Committee on the prize picture for October, "A Hard Blow," reported in favor of Mr. Tyler's print.

A committee, consisting of Messrs. Tyler, Partridge and Gibbs, were appointed to examine and pass upon the prize prints for November. Subject: "Caught."

After consultation, the Committee reported in favor of Mr. Blackburn's print.

Mr. Blackburn was very happy in his choice of a subject, which represented some small boys caught by the tide in a cove at the sea-shore.

After considerable discussion, "Solid Comfort" was chosen as the subject of illustration for the December meeting.

The report of the committee being favorable, Messrs. Haines and Shafer were elected members of the association.

Messrs. C. L. Goddard and A. W. Stanford were proposed for membership and referred to proper committee.

A letter from Mr. Sanford Robinson, a member now residing in Gautemala, to Mr. Gibbs and the members of the association generally, was read, and listened to with great interest.

Mr. Robinson has a magnificent field for photographic work, and is evidently taking advantage of it. He reports that it is simply impossible to make good silver prints, because of the heat and dampness, and that he has been obliged to content himself with blue prints. He has not been troubled with frilling, which he attributes to his method of development. Mr. Robinson uses the potash developer in an extremely diluted form, never using over two-thirds of a grain of pyro to the ounce of water.

Moved, That the Secretary provide a scrap-book for the preservation of formulæ, etc. Adopted.

On motion, adjourned.

W. B. Tyler,
Corresponding Secretary.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

Minutes of the stated meeting, held Wednesday evening, November 4, 1885, the *President*, Mr. Joseph W. Bates, in the chair.

The minutes of the last stated meeting having been approved, the Secretary read a notice in regard to the Third Annual Exhibition of the Boston Society of Amateur Photographers, which, it was announced, would be held in the rooms of the Boston Art Club from November 24th to 28th.

The resignation of Mr. Charles H. Mann was read and duly accepted.

The Exhibition Committee reported that arrangements had been made to hold the exhibition in the galleries of the Pennsylvania Academy of the Fine Arts, during the week beginning January 11, 1886. It would be kept open day and evening, and it was proposed to exhibit the lantern slides sent to the exhibition in the lecture-room of the Academy upon one evening during the week. It was also stated that all restrictions as to including pictures of different classes in a single frame had been withdrawn. The pictures would not be hung by classes, but all of each person's work would be hung together, without regard to class.

The Committee on Membership reported the election as active members of Messrs. Wm. C. Tripler, Edward D. Page, and Professor W. D. Holmes.

Mr. Coates asked for the experience of members in the use of paper negatives.

But few of those present had used them to any extent. An objection to their use seemed to be the oiling that was necessary. There was considerable difficulty in doing this properly, and it was mentioned that re-oiling was sometimes necessary. Some prints had been made without oiling with good success; though, of course, more time was necessary.

The question was asked whether any harm would result if, when intensifying a plate with mercury and cyanide of silver, the blackening action was stopped before it had permeated entirely through the film, the under side being left as whitened by the mercury?

It was thought that the entire film should always be blackened entirely through, to prevent future injurious action of the mercury on the negative. If this made the negative too intense, reduction could be resorted to, to bring it to proper printing density.

Mr. McCollin showed one of Mr. A. S. Barker's "focal plane" shutters. With this shutter the exposure is made through a narrow slit in a curtain, passing directly in front of the plate. In describing the shutter, Mr. McCollin said: Every point of the luminous image formed on the sensitive plate in the camera is the focal point or apex of a cone of rays whose base is the field of the lens. A little study of this optical truth will show wherein Barker's focal plane shutter has a great advantage over other exposers. It will be conceded that any exposing aperture will occupy a less time in passing a given point than it would require to traverse the field of the lens, and as the point thus exposed contains the concentrated volume of rays from the whole field of the lens, the time is shortened without loss of actinic effect. Some photographers, who have not looked particularly into the optics of photography, do not at once grasp this wonderful fact of the innumerable cones of rays proceeding from one base to all points of the plate, but every one knows that if he has a small stop in his lens and removes it, he immediately increases the brightness of the whole picture—of the whole focal plane. A small portion only of the plate being exposed at any one time, it is protected from the action of the diffused light always present in the camera to some degree, especially when a large stop is used. The plate is also protected from any motion in the object, except in that portion which is actually being exposed.

One of the pictures exhibited by Mr. McCollin shows the method of discharging Belgian paving-blocks from a vessel. An iron tub or bucket has been hoisted from the vessel, with upwards of a ton and a half of granite-blocks, and is seen overturned in the air, with the blocks falling to the pile on the wharf. These blocks in the air are as sharp as those lying in the pile below, and the dust made by the grinding of these heavy stones together is a striking feature of the picture.

Mr. McCollin also exhibited two plates secured by Mr. Barker during a thunder-storm on Thursday evening, October 29th. The scene was illuminated by a single flash of lightning for each plate, yet there is a clear sky, details of the landscape, both near and far, and altogether a fair photograph of the stable and surroundings, considering the circumstances under which it was made.

Mr. W. D. H. Wilson also had a new shutter to bring to the notice of the meeting, being the latest invention of Mr. Prosch, known as the "duplex shutter." This shutter is made to work between the combinations of a rapid symmetrical or rectilinear lens; a special tube, furnished with the shutter, taking the place of the original lens tube; so that it is preserved intact for other use when desired. The original diaphragm of the lens can be used. One of the most valuable features is, that by a simple adjustment the shutter may be opened by the pneumatic release, remaining open as long as desired, and then closed by pressing the rubber bulb a second time. This makes it a very perfect exposer for either time or instantaneous work.

Mr. Walmsley showed a new camera for copying and making photo-micrographs. A number of valuable features had been combined in the camera. It was provided with a double shifting front, of value in making lantern slides, where a certain part only of the negative was desirable to reproduce. By detaching the rear portion of the bed and attaching the camera to a tripod, it answered well for landscape or other ordinary work. In the center of the focusing screen a small disk of thin glass was cemented, forming a surface suitable for the delicate focusing necessary for microscopic work. A door in the side gave access to the lens in the middle of the camera, when used for copying purposes.

Mr. Bartlett having noticed that the substances used in treating the sensitive film for isochromatic photography were generally fluorescent bodies, suggested that experiments be made in this direction with *æsculum*, the active principle of the horse-chestnut, which was a very beautiful fluorescent body.

Adjourned.

ROBERT S. REDFIELD,
Secretary.

PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

PHILADELPHIA, Nov. 16, 1885.

THE regular monthly meeting was held on November 16th, with *Vice-President* HAINES in the chair. After the minutes of the previous meeting had been read and approved, nominations of officers to serve the coming year were made, with the following result:

President, H. Pusey; Vice-President, William A. Haines; Treasurer, A. Thompson; Secretary, W. W. Randall.

The treasurer's report, which showed a flourishing condition of the club's finances, was read and approved.

Mr. CLEMENTS then said that being of the opinion that our dark room was not so well lighted as it might be, he had written to several prominent plate makers to get their views on the subject. Among the letters he had received was one from Mr. M. A. Seed, of St. Louis. This letter proving of such general interest to the members, it was decided to incorporate it in our minutes. The communication was as follows:

ST. LOUIS, Nov. 7, 1885.

MR. A. CLEMENTS.

DEAR SIR,—I consider the question how to light a dark room an important one, for the following reasons: First, a light which is not in the least injurious to the eyes and consequently a pleasure to work in, is desirable.

Secondly, one that will not fog the most sensitive plate. Thirdly, a uniform light, in order that you may get uniform intensities. Nearly all dark rooms have one side of wood, so I would propose that an opening be cut in this partition 8 x 10 inches, fitted with orange and green glass—put English tissue-paper between the glass. Outside the 8 x 10 opening put a 10 x 12 box; insert a lamp having a ¾-inch wick. Always have the light the same height, and see that the top and bottom of the box have plenty of air-holes. The sample of glass I send by express.

I would further suggest, that when an extremely sensitive plate is to be developed, that it is only held near the light while the developer is being poured on. When the plate is thoroughly wetted and covered, hold your tray so that the light will not touch the plate until it is about half developed, then let the light shine on it as much as you require to enable you to clearly see its progress. I think with the above arrangements you will find that the development of a dry plate is simple and easy, not injurious to the eyes, and the results uniform.

Truly yours,

M. A. SEED.

Mr. Haines then showed one of the new Prosch shutters which had been loaned by Wilson, Hood & Co., and also acknowledged receipt of a sample package of the "Inglis Triumph" plate, which had been given him by Mr. Walmsley for trial.

On Mr. Thompson saying that he thought the club should be incorporated, after some discussion the *Vice-President* appointed Messrs. Cunningham, Randall and Gillingham as a committee to look into the matter.

After a recess, during which was a lantern exhibition, the meeting adjourned.

W. W. RANDALL,

Secretary.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

A SPECIAL meeting of the society was held at the rooms, 1260 Broadway, on Tuesday evening, October 27th, the *President*, Mr. F. C. BEACH, in the chair. The meeting was called to order at 8.15 P. M. He announced that there would be a social meeting held on Wednesday, November 4th, and a regular meeting on Tuesday, November 10th, and that on the 17th of November there would be an exhibition of photographs by members of the society. He requested that contributions for the exhibition should be sent in prior to November 14th.

The *President*—The drop shutter connected with the camera is one of those institutions which has attracted so much attention among photographers, that scientists are endeavoring to find out the proper means of determining the rapidity with which the shutter moves, and it gives me much pleasure to-night to bring before you Prof. L. H. Laudy, of Columbia College, who is also a member of our society, and who has been so very kind as to bring here this apparatus which you see, and show a scientific method of determining the rapidity of drop shutters, or the time it takes them to fall. I have the pleasure of introducing to you Professor Laudy.

Prof. LAUDY read the following paper—

Ladies and Gentlemen: I propose to speak on a very familiar subject, that is so well known that it seems almost idle occupation to explain anything relating to instantaneous exposures and the intervals of time.

The every-day world uses language after its own fashion, and with little reflection and less science often transfers the same term to different objects, from a fancied similarity, which has little, if any, foundation.

Many errors and inaccuracies are to be found in every occupation in life, and especially so is the word "Instantaneous" as used in photography. It is simply a conventional term to express an interval of time without stating what that interval may be.

In every-day discourse the word is used to express something rapid, not stopping to reason out a conclusion or qualify it; but using it in an automatic manner, the result of past experiences.

What then is Instantaneous?

The definition found in Webster is adequate enough for all uses in daily life, and reads as follows:

"A part of duration in which we perceive no succession, or the part that occupies the time of a single thought."

As thoughts are always accompanied with impression, and that interval cannot be less than one-eighth of a second to produce upon the retina an image of external objects, the definition requires more time than is usually occupied in making photographs of moving objects.

This analytical definition is simply one of judgment.

What we want is the synthesis that builds up and gives you an idea of the word and meaning.

The word *instant* is from the Latin (I am present); and instantaneous therefore means a part of time of small intervals.

There are three intervals: *Temporary*, *Natural* and *Rational*.

The first is a part of time immediately preceding another; the second relates to cause and effect; and the third, not a real interval, but a point which the mind conceives to exist before.

The word instantaneous, as used in physical measurements, relates to extremely small intervals—from a second to the millionth part—and in this connection is all that may be desired, and has a near approach to a proper application; and I hope to explain, by some brief statements of measurements that are used by physicists, how these small intervals are expressed.

Any attempt to express fractions of a second must be made in a way that our limited conceptions of figures may comprehend, and be able to judge of an interval of time that lies within a certain limit.

All our measurements of time or dimensions are *relative*, without which all figures fail to convey an idea.

The astronomer states the distance of stars, not in miles, but tells you they are so many times the distance of the sun from the earth.

The physicist measures a wave of light and expresses its length for a certain ray at $\frac{1}{67000}$ of an inch, and tells you that the undulations to produce violet light are 727 millions of millions in a second.

Further experiment gives the duration of the electric discharge at $\frac{1}{50000}$ of a second. Thus the electric discharge, as compared with the figures in light, cannot be called instantaneous, for it has a longer duration than light, however small that fraction may be.

To go still farther into motion and time, molecular physicists give figures that would require light ages to catch up to.

Prof. Crookes says that if we take a bulb 13.5 c.m. in diameter, it contains more than 1,000,000,000,000,000,000,000,000 molecules. Now, when that bulb is exhausted to a millionth, we still have a *trillion* molecules in the bulb.*

These figures the mind cannot conceive of, and it is not important that it should, as they are only used as a basis of minute calculation. In all these cases there has been used either *time* or *dimensions* as a *relative term*.

Now when we come to divide or speak of the hundredth part of a second, as compared with these figures given above, the most rapid animate objects are comparatively at rest.

We speak of a negative taken with a certain size diaphragm, and the time is stated in so many *seconds* or *minutes*. This is understood by all, for the reason that we have qualified by stating the *unit*, which is familiar to every one. When the exposure is less than a second, all that is necessary is to know the speed of exposors, and then express the time in a definite fraction.

When the word instantaneous is used, unless the fraction is expressed, it is as indefinite as *shortly*, *soon*, *perhaps*, *by and by*, etc., as used in ordinary language.

Let us try, and at once abandon such terms as were formerly used before the introduction of the gelatine plate, and replace them with expressions which are individually distinct, and distinguished by some quality.

I might add that I think there is hardly a word used in photography which more urgently calls for a substitute than instantaneous.

I submit this for the careful consideration of members of this society, and I hope your attention may be excited to this important subject, for, as photographers, we have a particular interest to use intelligent and practical terms of expression. I have noticed with pleasure that some of the leading photographic journals have ventured to use "so-called instantaneous," showing that the term is taken with a great deal of faith, and carries with it a ray of suspicion, if not ridicule.

Whatever doubts may exist on the use of the term, there can at all events be no dispute that the word instantaneous, as used in photography, is a *misnomer*. A question, therefore, now arises of great moment, namely, what can be used in place of instantaneous?

I will not venture to propose a name this evening, as the views I have advanced are only preliminary, and will be treated of more fully at another time.

My apology for having introduced this digression is, that though adding nothing to the strength of the argument, it may be useful as an illustration, and thereby enable others to appreciate the value of methods of determining small intervals.

The determination of small intervals of time has attracted the attention of investigators for many years. As early as 1675, Romer, a Danish astronomer, first deduced the velocity of light from observations of the eclipse of

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* Phil Mag., Vol. 36, p. 141.

Jupiter's first satellite, and found that light travels 190,000 miles in a second. Notwithstanding this great velocity, mechanical means were devised by Foucault to measure, by means of a rotating mirror, and determine the volocity of light and electricity, which are so near in velocity that, in round numbers, they are expressed as having a velocity of 200,000 miles in a second. They were dealing with velocities unknown to any photographer, and they divided seconds into 200,000 parts. Our fractions all lie within the $\frac{1}{500}$ part, and by far the greater number come within the $\frac{1}{100}$ of a second. Different kinds of apparatus have been devised from time to time to measure fractions of a second. They are the chronoscope, chronograph, pendulum and tuning-fork. The latter I have selected, for it can be so arranged that a tracing of each wave can be taken and made the basis of calculation. The principle of the apparatus that I will call your attention to this evening, may be described in this way:

If a tuning-fork vibrates 256, 512, or any given number of times in a second, the time of each vibration must be the $\frac{1}{256}$ or $\frac{1}{512}$ part of a second. If now, by any means, we make the vibrating fork record on a smoked surface, parallel to the wavy lines of the fork, its duration may be estimated by counting the recorded vibrations and then dividing the number of waves into the distance the body moves.

There are a few facts that we must commit to memory. One is that velocity is the length divided by time. A gentleman asked me some time ago what was the time of the shutter, and how fast it moved? Unless you specify the distance the shutter moves, you have no basis of calculation. You must have some divisor, and that is the distance a body moves in a given time; therefore, the velocity is the length divided by the time. The methods of the pendulum, the chronoscope and the chronograph are to some extent objectionable. The principal objection is the expense of the apparatus. The chronoscope depends upon a reed, giving a certain number of vibrations per second, producing a musical note, and the least variation in that note alters the speed of the chronoscope. The apparatus itself is expensive, and it requires an electrical attachment. The tuning-fork is the most simple and the least expensive. There have been some objections made to this process—two in particular. One is, that it is impossible for the photographer to secure a tuning-fork and to determine the pitch. The fork is arranged to the pitch and vibrations as you purchase it, and a fork that will do very well can be purchased for about five dollars. The other objection is, the friction of the style against the body that it comes in contact with, whether it is mica or glass. Thinking there might be some degree of friction that would affect it, I made this experiment: I took a piece of glass and smoked it in the usual way, then I took a hair from my mustache and attached it to the fork, and in place of an ordinary style I had been in the habit of using, and those are the results produced [exhibiting]. I carefully measured the waves and found that there was not the slightest difference due to friction. Besides these mechanical means, there is the photographic method. There are many of these which have been devised from time to time, the earliest of which was to photograph the hand moving over a clock-surface or a circle. In that case it was necessary to have a uniform motion, which is a very difficult mechanical contrivance. Another method was to photograph a body falling. You marked off feet and inches on a white surface, and then let an object fall in front of that, and photographed the body as it fell.

The others are comparative methods, where, to test the speed of a shutter of unknown rapidity, you have a glass ball revolving, illuminated by a strong light. Then you have a shutter of known velocity, say one-tenth or one-twentieth of a second. You expose the ball in its revolution simultaneously with the two exposors, and in this way you can measure the time of the two exposures by the trail of light from the silvered ball.

In all these cases by the photographic methods, you are obliged to make for each determination a negative, which requires, of course, that the light shall be suitable, the illumination be proper, and that the object shall move in a certain position, and at each time a negative is required, which involves time and expense. I was prompted in this matter to make this investigation and reduce the possible errors existing, and at the same time to make a piece of apparatus which would be simple in construction, and which it would be possible for every individual to procure if he thought necessary. When I first started I commenced with a simple tuning-fork, and then I thought that one vibrating by electricity would be a good thing, so I had one constructed, and this is the apparatus I wish to show you first.

commenced with a C fork, making 256 vibrations per second; then I had the 320 vibration and the 512 vibration. You may use a fork making any number of vibrations if you only know the number. I selected these, because they have this advantage—they have a certain tone. You see this fork is quite rich and full in tone, and at any time it can be very readily determined whether its pitch is altered, by comparison with any standard musical instrument, as, for instance, the organ-pipe. But the variations of the pitch of these forks is so trifling, even when the style is attached with wax, that they can hardly be taken into consideration. These are mounted, you notice, with a small style on the end, made of a very delicate bristle attached with wax. The ordinary drop or gravity shutter is the one that I have selected for this evening's exhibit, for the reason that it is more easy to manipulate than the curve shutter, with which the determinations of area are a little more difficult to make, and the calculations not quite as simple. Here [exhibiting] is an ordinary drop shutter on which is a smoked glass. On this shutter is a piece of paper smoked over an ordinary kerosene lamp, and attached by four common tacks. In some cases I have found it advisable to use isinglass where we have a very high speed. I have experimented, using three elastics. Unless you wire the shutter in this way [showing], it will break to pieces. Here is one with two elastics, which can be used with success without injury to the instrument. The large fork that I have arranged here on the table, gives 512 vibrations per second. The larger the number of waves produced the less will be the error. If we only have two or three waves, it is very difficult to decide where the first one starts and the last one stops; but if we have eight or ten or twelve there is no difficulty. I will illustrate the principle by a little piece of apparatus I have here, which is nothing but a Duhamel's cylinder in a rough way. Most of the apparatus, you see, is rather rough. I have constructed considerable of it myself and a carpenter the rest. I have utilized everything I could to make it as inexpensive as possible. The greatest expense is attached to the forks themselves, but a commoner fork than these will answer the purpose. You could hardly tell the difference between these two forks unless you examined them, but that fork [showing] cost twenty dollars and this [showing] five dollars. There is not the least variation n that fork. The other is not as reliable for very delicate work, but for all the ordinary work that a photographer is called upon to do, a fork costing five dollars is good enough. I start the vibrations of the fork with an ordinary bow. Now, as the fork is vibrating, I bring it in contact with the cylinder. You see I give the cylinder different speeds. If I revolve it very fast, as I will show you, the greater the speed the less the number of waves in a given space [exhibits result]. You will notice from that, that where the cylinder moved rapidly you have long waves, and where it moved slowly you have a series of short waves. I can illustrate that better to the entire audience by a simple experiment in the lantern. Here I have a large fork making sixty-five vibrations per second. In the vertical attachment of the lantern I have a piece of smoked glasss. I will make the fork vibrate and throw the vibrations on the screen. [The room was darkened, and the Professor showed the vibrations on a screen.] In this connection let me mention that here are three curves, one upon mica, another upon glass, and another upon paper. The question was asked me some time ago, whether it did not make a difference whether mica, glass or paper was used. It does not. All bodies, practically speaking, for the first sixteen feet, fall with the same velocity. If you examine these in the sunlight you will find that they all register, illustrating the fact that all bodies fall the first sixteen feet with the same velocity. Now, upon this end of the table, let me mount one of these forks. We will take the 256 fork. I place it in a little stand that I have here arranged, and make it rigid in the post. We have the shutter arranged here on this little board. The light is not as good as I wish it might be here, so I will bring the style in contact with the fork with a little more pressure than if I was working in daylight. I vibrate the fork in this way till I get a good amplitude. [Shows result. Applause.] Now let me make two or three of these plates, because I want to project them in the lantern, so I can show the uniformity that exists. I will show you a record made when the elastic was used. I make the ordinary waves first without the elastic. This is a mica surface. Now I will use a single elastic. Now I will use the two elastics. You see the difference in the curve. Now I will take this shutter and try it first with one elastic [does so], now with two elastics [does so]. Now three elastics will take any ordinary lens off the camera, so I would not advise you to use three elastics of this size. The speed of that I have determined, and the curves are attached to this piece of white card-board in front here and the greatest possible speed that I can get on an ordinary shutter with three elastics, the opening being three inches, gives me $\frac{1}{118}$ of a second. I have arranged these posts so that you can put the fork in horizontally for determining the speed of shutters moving in an arc of a circle. I will put on the 512 fork, and you will notice by the sound produced that there is considerable difference in the tone—the pitch is much higher. Of course, for shutters moving with the speed that this is, we must have enough to get at least five waves in a given distance, and with this fork we can do it. As the pitch of the fork increases, the amplitude decreases. The fork we have on this stand now makes 512 vibrations per second; therefore, the amplitude is small; but I think, if we have patience enough, I can use it this evening. [Makes experiment.] Well, it missed in just the part I wished to show you. I will try it once more. I will make the contact a little more perfect with the style on the fork. [Makes the experiment successfully. Applause.] That was done with the two elastics. With three elastics it is attended with more difficulty, and I will not undertake to experiment with three to-night. Now, I would like to project some of these curves that I have in the lantern. [Makes experiment.] Here we have the entire waves on mica. You notice the recoil of the fork. By the way, I have found the most adhesive material for fastening the blackened surface to shutter is paraffine. Glue and gums have failed, but a little paraffine melted secures the glass or mica to the shutter with a very good contact. [Exhibits results.] I will take those to the lantern and we can project part of them. [Room darkened and projections made.] I would like to call your attention to another particular, which is, that when a shutter first begins to move, we have the zero point. That [exhibiting] shows a series of lines close together You see how the shutter increases in speed as they get to the opposite end. [Shows the difference of the wave length.] The measurements usually taken are not from the time the shutter begins to start, but at the time the exposure begins, so that determinations are made from the start of exposure to close of same, three inches. I wish to call your attention to the similarity of those curves. One has a little more amplitude than the other, but the curves are the same in number. [Exhibits the 256 vibration in lantern.] The last curve is with one elastic band and the other with two elastic bands.

I will call your attention to the waves on the shutter made with the 512 fork. You see the wave is inclined to be nearer straight, showing the great velocity with which the shutter was moving and the fork vibrating. This [showing] is a picture of the chronograph. It is a somewhat complicated piece of mechanism. This cylinder holds a piece of blackened paper. The cylinder makes a turn in one minute exactly, and at each two seconds the pen comes in contact with the paper. It is attached to a pendulum clock, and usually breaks contact every two seconds, but the velocity of this can be so increased that instead of marking one inch it will mark three inches. This is an exposure slide used by Prof. Mayer at the transit of Venus. What I wish to call your attention to is the size of the opening, which in the original was $\frac{22}{100}$ of an inch. By the use of this shutter the exposure was $\frac{1}{500}$ of a second, though the shutter was going but a little faster than the one exhibited here with three elastic bands; but the opening is much smaller.

Professor LAUDY then exhibited and commented on several exposors and pictures made about two years ago by Mr. Gubelman, and also explained a table, given below, showing the speed at which objects move per second, and made an experiment showing the duration of the electric spark.

MINUTES PER MILE.	FEET PER SECOND.
300	29.333
250	31.059
245	32.195
240	33.000
235	34.065
230	35.200
225	36.414
223	36.923
221	37.447
218	38.261
215	39.111
210	40.305
200	44.000
155	45.913
140	52.800
135	55.578

In conclusion, he said: I take this occasion to thank those gentlemen who have rendered me considerable assistance in this direction, and also for the kind attention you have given to me on this subject. Great applause).

[Dr. Laudy's apparatus is described in detail in an article, "Determination of Intervals of Exposure," by L. H. Laudy, Ph D., published in ANTHONY'S BULLETIN for April 25, 1885.]

The *President*—Gentlemen, I think we have been very highly entertained by these demonstrations, and later on it will be proper to pass a resolution of thanks to Professor Laudy. I believe Mr. Canfield has something to say in respect to the exhibition of pictures.

The *Secretary*—There are one or two points to which attention has been called by some of the members in regard to the circular for the exhibition. One of them is regarding the limit of size which is given in one of the rules. It reads, "No picture (except stereoscopic) smaller than 5 x 8 will be received on single mount. All under this size must be grouped on larger mount for convenience in hanging." The restriction as to size was intended to apply to the mount, and not to the picture. It should read, "No pictures, except stereoscopic, will be received on mounts smaller than 5 x 8."

A question that has been asked is in regard to the authorship of exhibits. The first of the notes says: "The exposure and development of the negative, and the printing and toning of all positives exhibited, must be the *bona fide* work of the member sending them." The intention of the committee in making that point was that all pictures sent for competition should fill these requirements; but it has been decided that pictures furnished by professionals, from negatives made by members, will be received for exhibition, but not for competition.

The *President*—I have the pleasure of announcing that Mr. George G. Rockwood, a member of this society, will now read a paper on posing.

Mr. ROCKWOOD — Before reading what I have to say about posing, I have a letter in my hand which is of peculiar interest, especially in connection with the work of this evening as detailed by Professor Laudy, connecting electricity with photography. It is pretty well known that Professor Morse had a great deal to do with the introduction of photography in this country. This letter is dated May 24, 1845, and signed by Samuel F. B. Morse. The first part is of very little interest, but the concluding part has great significance. He says: "I hope the receipts of each office will soon mount up to at least *five dollars a day*. That sum will just pay expenses, exclusive of my salary and Mr. Vail's." The idea was, that he hoped that the receipts of the offices would pay his salary and Mr. Vail's, amounting to five dollars a day. When we think of the receipts of the Western Union Telegraph Company to-day, it makes that letter of peculiar interest.

Mr. ROCKWOOD then read his paper. [See page 680.]

The *President*—By my request, Mr. Rockwood has been kind enough to bring some samples of very large paper negatives taken on the Eastman paper, and he will explain them a little more fully.

Mr. ROCKWOOD—The first paper portrait negative I made of life size had an exposure of fifteen seconds. As the season went on and the light became feebler, I had to increase that time. That was made a couple of months ago. Here is an ordinary life size [exhibiting a head]. I did not bring a print. I will show you the negative and print, 24 x 36, of the interior of Dr. John Hall's church. I was very much surprised to find that the grain of the wood is perceptible all over that end [pointing to the picture] of the church, with no granulation of paper visible.

A *Member*—What time was that exposed?

Mr. ROCKWOOD—I think it was about two hours. You see the detail down below here is all out. Here [exhibiting] is a negative, 24 x 36, of St. Francis Xavier's. This had an exposure of an hour and ten minutes. The pews there were absolutely black, and there was not the slightest detail visible, but a little bit of reflection on the backs of the seats. I tried the experiment of printing from both sides of the paper negative, and found no perceptible difference.

The *President*—Attention is directed to this negative, especially, on account of the avoidance of halation so common in interiors. It shows the adaptability of the paper for that purpose.

The next matter of interest on the programme will be the exhibition, by Mr. Fisk, of an improved camera, the invention of Mr. S. C. Nash.

Mr. FISK—*Mr. President:* Perhaps it would be well to cite two or three points which Mr. Nash had in view in the construction of this camera. The first was to do away with double dry plate holders. The second was that of the changing box, which is necessary in case the holders are done away with. The third was to make one, two, three or four pictures upon any one plate at will, and either upon the lower or the upper half, on the right or left hand side of the plate, or on any quarter of the plate; also having a hand an automatic attachment for recording which plate was to be next exposed, or to know which plate had been already exposed. This [exhibiting] is the camera complete, with the exception of the lens. It contains twelve plate holders or trays. This is a simple flat tray, and the plates are laid in without any slide over them. The lens is placed on a rotating disk, and is rotated around so as to cover any section of the plate, and is moved horizontally to the center of the plate for taking one picture on a whole plate.

By unscrewing these two little nuts on these knobs, you can carry out the front for focusing, and also get the side swing by simply using either knob as you please. At the top, in the cameras which he proposes to construct, this little knob, which regulates the stoppage of the plate as it comes up, is so arranged that it can slide backward and forward, giving the other or vertical swing. You have then a double swing. Previous to the exposing, this little lid is opened and the ground glass is found in position. This is noted, or found out by this disk on the side, which revolves as the plates are brought up for exposure, and automatically enables a record to be made of which plate comes into play. He has drawn, I believe, a diagram and photographed it. He prints these off on plain paper and puts them in upon a disk, and they then serve as an index. On the top you will see two recesses. These are little levers, and from these, going down to the bottom of the plate, are shields one-quarter the size of the plate, and he can cover any section of the plate that he wishes, by simply actuating these levers.

By this method you have the privilege of making from one to four pictures at will in any position on the plate. The idea is designed for artists, amateurs, or any one who wishes to go out photographing and comes to a little gate or something of that character, and can easily take such a picture on a quarter of the plate and not waste the whole plate. This little knob on top is so arranged that by pushing it down one-half of the way and turning it, it goes just far enough, so that the plate in coming up strikes it and stops.

Now, as the ground glass rests against this knob or fork, so must the plate come; and no matter whether he inclines this knob backward or forward, the plate must come where the ground glass was. Now, I will release that and begin the turning of the plates. Plate No. 1 comes up. The plates are, as I said, in little trays, and you can tell always by this record or index what plate is coming up, or what plate you wish to expose. If you want a certain plate to come up, you close this lid down and pull this slide. If, after you get to plate No. 7, for instance, and you have made a quarter picture on any one of the other plates, and you want to use that plate again, you do not have to turn back all the plates to find out, but you simply release this thumbscrew, and push back the brass wheel covering the index, and turn it around until you find out the plate needed, then place it in gear again, and operate it as wanted.

The only thing to bear in mind in finding a certain plate, is to remember where you unlocked the gear and replace it properly. The camera can be operated very easily, almost by feeling. You do not need to look at it, except in focusing. All you have to do is pull this slide out; that covers the plate. Then turn the plate up till it strikes the knob or fork. Then press the knob down and the plate is steady. These plates turn over in front of the box, and as they go over in front there is plush on sides of camera; or, as he has it here, some sort of fur, so that no light can strike the plate. The camera as you see it here, looks somewhat bulky. This is one of the first cameras made and so it is made heavier than necessary. But it contains everything. You have a record of everything that is being done and the holders are never misplaced. I have some views here which were made with the camera, which Mr. Nash has kindly sent to show the working of it.

The *President*—Have you the shutter that is on the front of the camera?

Mr. FISK—I have not. In regard to the shutter, Mr. Nash has so arranged it, that it never requires setting between exposures. He has a disk operated by a watch-spring, and he turns it around before using thirty-five times. The first twelve times then, that it revolves for exposure there is no difference in the time, as he has calculated. All you have to do in very quick work, is simply to have your plate ready, touch the catch, bring up another plate, touch the catch again, and so on. You don't have to stop to change holders, reset shutter, etc., as is the case with other apparatus.

Mr. CANFIELD—How are the plates put in?

Mr. FISK—These are dummy plates to keep the weight even. There is a spring down at the bottom with two little lugs. The plate is put down on that spring and let go, and the spring at the bottom carries it out against these two lugs.

A *Member*—What becomes of the ground glass when exposing the plates?

Mr. FISK—It comes forward.

A *Member*—You cannot focus again after exposing a plate?

Mr. FISK—Yes, you can focus as many times as you choose.

Mr. Fisk exhibited a number of specimens of work done in the manner described above. Four pictures on a plate, vertically and horizontally, and on the lower and upper halves of plates.

The *President*—I want to give you a more popular idea of the principle of this machine. You see that it acts something like an old revolving stereoscope. Only, instead of passing down to the bottom and around coming up, the plates occupy but half of a circle.

Mr. ROCKWOOD—Allow me to say that I have taken charge of the photographic department of the *Art Amateur*. It is purely a labor of love—I get nothing for it. This is the first instance, I believe, of a practical business photographer taking charge of a journal in this country. It is purely in the interest of amateurs that I do it. You know very well that a great many of the articles contributed to the photographic press, especially on the other side, are very ingenious efforts to conceal something, The article will be headed how to do this or how to do that, and when you get through it you have found out everything except the specific thing you wanted to know. Now I don't propose to edit that department with the idea of concealing what I know about photography. What I do know I will make known to the amateurs of this country. I go into it with a good deal of warmth and enthusiasm, and ask your hearty co-operation. If there is any gentleman here that gets an idea about photography and wishes it known, he will receive full credit for it, if he will kindly send it to my address, which I believe most of you know. I will do everything I can to forward the art of photography, not concealing anything I know or others know.

Prof. LAUDY—I wish to call your attention to a diagram that I omitted to explain. Our worthy secretary has framed it, and on the strength of that frame I believe has placed an embargo on it, and says it must not be removed, therefore I will present it to the society. It is representative of a set or series of work with my apparatus that I have been forming. I hope it will be given a favorable position, so that you may see it at your leisure, and think more seriously of this subject of instantaneous photography.

The *Secretary*—Mr. Rockwood has just whispered to me that if we want a copy of this large picture, he will give it to us; and as I know that his word is as good as his bond, I move a vote of thanks to him for it. Motion carried.

The *President*—I would like to show you a tripod head. The object of this tripod head is to enable a person, when he gets a tripod set, to make the camera turn round at any angle up or down, and screw it there without the necessity of moving the tripod legs. For instance, if he wanted to take a mountain or any distant view, the camera is very easily elevated or lowered without moving the tripod. Then again. instead of the camera being screwed to the tripod head, it is fastened by means of a slide, and an extra wheel on disk is arranged to screw up against the bottom of the camera to make it more firm. You will see there is a little square head upon a round spindle which has upon it an extra disk.

The head consisted of a ball and socket joint, the lower plate being secured rigidly to the wood head of the tripod.

The President stated the idea was to try and do away with the tripod screw, and also to be able to put the camera on quicker.

(To be continued.)

◆

WE lately saw a "funny thing" that pleased us much, for it seems to presage of the humor of the future. It was in an English comic paper—London *Fun*, we think. (And here let us remark that they in England are a century ahead of us in intricate jocoseness.) This paragraph—which haunts us yet like a voice heard in a dream—asked, in substance, "What is Mr. Gladstone's favorite study?" and then proceeded to answer the question by saying, "GeOMetry." By a special arrangement with an English contemporary we are enabled to elucidate for the benefit of the American reader. The letters in capitals, "G. O. M.," are the initials of the affectionate by-name the British public has given its great statesman—"Grand Old Man." Now let the American reader compute the amount of mental strength he could have derived from finding out this result for himself.—*Buffalo Express.*

What Our Friends Would Like to Know.

N.B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—W. J. G. writes:—In a former number you told us that gum copal was soluble in pure benzole. Please tell us just how to do it? Also, gum damar is said to be soluble in benzole. Please tell how it is done?

A.—We have no difficulty in dissolving these gums. The best way to treat them is to place the coarsely crushed material in a piece of cotton cloth and suspend in the benzole, when it will gradually dissolve.

Q.—E. C. S. writes:—Please give me a formula for a developer for ferrotype plates like that given in Esterbrooke's "The Ferrotype and How to Make It."

A.—Take half a pound of protosulphate of iron, crush to a coarse powder and put upon it one pound of water at the temperature of an ordinary room. Shake the mixture from time to time until all or nearly all the salt is dissolved. Now filter and bottle it. Make a strong solution of tannin in water (say 100 grains to the ounce) and add this to enough of the iron solution to make up a convenient quantity of developer, following the directions given in Esterbrooke as to when to stop and also in the matter of further additions.

Q.—H. S. S. writes:—I have a great deal of trouble by the picture fogging or a white scum forming over the surface of the plate, sometimes entirely obscuring the picture. This scum may be rubbed off, but is likely to mar the picture. Perhaps you can suggest a remedy?

A.—Make the silver bath alkaline with carbonate of soda, and then place in the sun for a day. After this filter out the black deposit, make acid with pure nitric acid and try again. See, also, Esterbrooke, page 165.

Q.—L. H. B. writes:—Will you kindly furnish me, through the BULLETIN, with a formula for developing instantaneous exposures? I am using Stanley plates and Prosch shutter, but do not get satisfactory results.

A.—Use Cooper's developer. See issue of BULLETIN for January 10, 1885; also read the articles in recent numbers of the BULLETIN by S. R. Bottone, beginning on page 549 of September 26th, and still coming out.

Q.—F. O. H. writes:—I am about to fit up a new gallery, and would like your opinion about the sky-light. Which is best, ground glass or plain? My operating room will be 14 x 24 feet, unobstructed north light; nine feet from floor to lowest point of sky-light.

A.—If your sky-light faces north, use plain glass; if south, ground glass.

Q.—T. W. M. writes:—Please inform me through the BULLETIN, first, how to make the gelatine for dry plates; second, how to make a developer for the same. Could I buy the gelatine ready prepared?

A.—You cannot make gelatine for dry plates; it has to be prepared specially and with great care. Gelatine suitable for the purpose is for sale by our publishers.

With regard to developer for dry plates, you can use Cooper's developer, which has been published several times in the BULLETIN during the past year. See page 24.

Q.—H. C. writes:—I inclose a print I made on your gelatino-bromide paper, and would like to have you tell me through the BULLETIN what is the reason I can get no better print, the one inclosed being the best out of four I have tried; and also the cause of the streaks running crosswise across the skies?

A.—In regard to gelatino-bromide paper which you send, and your question about it, we would say that the print has been greatly over-exposed, hence its foggy and indistinct appearance. The streaks across it are due to the imperfect coating of the paper.

Q.—T. J. S. writes us a long letter about toning his prints, and the trouble he has with a persistent red color.

A.—We have answered all his questions in an article on toning and printing, published October 24th in the BULLETIN, and entitled "Toning and Printing." If he carefully follows the directions there given he can get any tone he pleases.

Views Caught with the Drop Shutter.

JAMES H. LLOYD, of Troy, has been astonishing the people of his section with some fine work in large groups. He has recently made a fine composition piece representing the Apollo Commandery, K. T., of Troy, in conclave. We have not seen the picture yet, but hope to have a copy soon. From all we can hear, the whole affair is a grand success, and reflects great credit on Mr. Lloyd's artistic taste as well as his skill as a photographer. The original picture cost about $2,000, and is copyrighted.

J. B. Stanton, Amsterdam, N. Y., has sold his studio to N. M. Austin, Hartford, Conn.

J. S. Hovey & Son, Rome, N. Y., have sold out to J. W. Williams. H. W. Oliver will operate for Mr. Williams.

T. J. Curran, Herkimer, N. Y., has opened a fine new studio.

Minor & Gwits, Richfield Springs, have dissolved partnership. Mr. Gwits will continue the business. Mr. Minor will open a new studio at Waterville, N. Y.

Mr. E. H. Paige, of Waukesha, Wisconsin, has recently built a new studio, which is finely fitted, and well appreciated by his fellow townsmen. Mr. Paige is ably assisted by his good wife, and when a man is thus supported his success is assured.

Mrs. J. B. Lewis, of 1216 Broadway, New York, has decided to open a branch photographic studio in Greenwich, Conn. Mrs. Lewis was located at Indian Harbor Hotel the last two summers, where her good work was much admired.

Mr. Alex. Hesler has changed his studio in Chicago to Dearborn street, where he has fitted up a most complete establishment in an entirely new building. Such success and enterprise is most encouraging, and we tender congratulations.

J. A. Stivers has opened a new studio in Fourth avenue, Mount Vernon N. Y. Everything is carefully arranged for the comfort of his patrons and successful work on his own part. Mr. Herman Behm, well known at Allen's gallery at Catskill, operates for Mr. Stivers.

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ADVERTISING RATES.

	1 Issue.	2 Issues.	6 Issues.	12 Issues.	24 Issues.
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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

INDO-TINT PROCESS.
Negative on the
Stanley Dry Plate.

THE FOREST,
BY
W. H. BARTHOLOMEW.

AM. PHOTO-LITHO. CO., N. Y.
Made with a
Dallmeyer Rapid Rectilinear Lens.

ANTHONY'S
Photographic Bulletin.

PUBLISHED SEMI-MONTHLY,
Issued the second and fourth Saturdays of each month.

Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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THE BULLETIN FOR 1886.

That the Bulletin has proved a success during the past year, our long list of unsolicited testimonials bears ample witness. And we have found it utterly impossible to publish all the good things that have been said of us, owing to the wealth of material always at hand to fill our pages. What is yet more encouraging to us is the large increase in our subscription lists, on which the number of names is now almost double what it was one year ago, and is increasing with every issue of the journal. We recall with pride the names of some of the contributors to our pages: Prof. C. F. Chandler, Ph. D., Prof. Ogden N. Rood, Dr. A. H. Elliott, Ph. D., Prof. J. M. Eder, Ph. D., Henry J. Newton, E. L. Wilson, Ph. D., L. H. Laudy, Ph. D., Victor Schumann, Prof. Chas. F. Himes, Thos. Bolas, F. C. S., M. Carey Lea, Dr. R. W. Wilcox, F. C. Beach, Dr. John H. Janeway, Prof. Spencer Newbury, A. A. Campbell Swinton, Fred E. Ives, T. C. Roche, E. K. Hough, G. H. Loomis, J. B. Gardner, W. E. Partridge, P. C. Duchochois, J. F. Ryder, David Cooper, Abraham Bogardus, and a host of others. In addition to the contributions from the above gentlemen, we have given our readers clear and accurate reports of the photographic societies, in many cases from the stenographic notes of our own reporters. Our correspondence column has been a source of pleasure to our editors, and has become an important and unrivaled feature of our publication.

This is what we have done and shall continue to do, with this advantage, that the fund of material upon which we can draw in the future is still larger than that utilized in the past. Among other improvements we intend to illustrate every number of the Bulletin with a specimen of the best work in both professional and amateur photography. Thus the subscribers will obtain in one year two dozen gems of the photographic art. Various improvements in the literary part of the journal will also be made. In fact nothing will be left undone to keep it in the front rank of American photographic journals.

The improvements we contemplate will involve a large expenditure of money, and as we cannot be expected to furnish so much valuable material at a loss, we shall be compelled to charge three dollars for the illustrated edition of the Bulletin, and two dollars without the illustrations. Just think of it! Twenty-four illustrations and seven hundred and sixty-eight pages of valuable photographic information for three dollars. There is not another photographic journal in America that does so much for so little. Either the illustrations alone or the literary material alone are worth the price of the subscription, and we give them both, so the subscriber gets twice the worth of his money.

We have laid out a large amount of work for the coming year, and we intend to carry it through. But to do this with energy and pleasure, we must have the encouragement of our readers and subscribers. Help us, and we will help you as much as, if not more, than in the past. Our policy will always be, *With charity for all and malice towards none.* THE PUBLISHERS.

◆

OUR New York contemporary, the BULLETIN, of November 14th, contains as its supplement the view of a private residence and grounds; by all odds the finest piece of view work we have ever seen. The light and shade are grand. There is little fault in it; it is almost perfect in every detail. The lines are as true as the architect could draw them. That one picture is worth more than the cost of a year's subscription.

St. Louis Photographer.

◆

EDITORIAL NOTES.

MR. W. B. TYLER, of the Pacific Coast Amateur Photographic Association, sends us an account of some of the doings of his society in and around San Francisco. They have what they call a new way of "economising" plates, which is practiced among the beginners. This is accomplished by making two exposures upon one plate. This is a joke of one of the older members, of course.

MR. CHARLES G. YALE, in a recent address before the above association, speaks thus of the uses of an honorary member: "I have perched on a rock as a lone fisherman, climbed mill-wheels to give ideas of comparative size, been towed astern of a yacht, filled up gaps in groups, and, in fact, have been *taken* as often as Passavant's dog. Between that dog and myself there is a bond of sympathy, which, not photographers, but those photographed, can only appreciate.

"MOSAICS" for 1886 is now ready, and, as we said in our last issue, is full of good things photographic. The "Year Book" and "British Journal Almanac" will soon be here; and the cost of them is so trifling compared with the store of good things they contain, that, together with "Mosaics," they should be in the hands of every professional and amateur photographer. It is really wonderful to think that three such publications can be bought so cheaply.

MR. J. S. RICH having resigned the secretaryship of the Postal Photographic Club, PROFESSOR E. L. FRENCH, of Aurora, N. Y., has been elected to that office.

THE HARTFORD CAMERA CLUB gave a lantern exhibition on November 17th, which was a brilliant success. About 130 pictures were thrown upon the screen, and MR. J. SEDGWICK STEELE explained them. We are glad to know that the club has entered this delightful field of photographic work for winter evenings.

WE have received the first number of *The Photographic Beacon*, a new Chicago journal of matters photographic. In appearance it is about the size and style of the *Photographic News*, but not so closely printed. It is filled with a number of first-rate articles, and deserves a place among the photographic journals.

THE POSTAL PHOTOGRAPHIC CLUB.

This now well-established club has just issued "Album No. 3" and its accompanying note-book. We note twenty-four prints of varied degrees of excellence, yet all more or less good. The comments of the individual members of the club upon the production of their fellow workers are very interesting and eminently instructive. Among the best pictures, we would note the group of sheep, by Miss Salter; No. 4, a skull and classic female bust, *tête-à-tête*, by Mr. Canfield, the President (not as a print, but as a unique study); No. 9, by Mr. Wadsworth, one of the best long distance views we have seen; No. 15, a waterfall seen through a leafy vista, by Mr. French; No. 22, a Yosemite view, by Mr. Zabriskie; and all Mr. Dumont's pictures, from whom we have yet to see an inartistic print.

Altogether, the members of this club are to be congratulated upon the good work they are doing and fostering among amateurs. We shall always be glad to see examples of their work, and feel interested in their efforts to encourage photographic art.

OUR ILLUSTRATION.

With this issue we present our readers with a piece of foliage work in photography that is seldom, if ever, excelled upon dry plates. The picture is the work of Mr. W. H. Bartholomew, of New York, and the negative was made upon the Stanley Plate with a Dallmeyer Rapid Rectilinear Lens. The reproduction of the print in the Bulletin, is by the Indo-tint process of Mr. T. C. Roche and worked by the American Photo-lithographic Company. There is no example of photographic printing that is so difficult to reproduce by mechanical printing as the delicate gradations of light and shade found in foliage, and we think that Mr. Bartholomew's beautiful picture has been most faithfully reproduced.

FIRST ANNUAL EXHIBITION OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

(Second Notice.)

Mr. E. M. Franklin showed a number of good pictures having but one serious fault. This fault was in the toning, which appeared to be decidedly overdone. The artistic work on both groups and views was good, and deserved better printing and toning.

Mr. C. W. Hull exhibited a number of views of yachts; but, like most of these subjects, were lacking in artistic interest, at least to us. The photographic work on these pictures was good and carefully carried out.

Mr. Philip Meeder had a number of beautiful woodland studies that were very well caught. Much artistic taste was exhibited in the views; and the care taken with the negatives to bring out the fine pieces of light and shade in the foliage deserves great praise. We seldom see such good work upon foliage on dry plates. Altogether this exhibit was an interesting study and well done.

Mr. C. W. Canfield exhibited quite a number of studies, in all of which was fine artistic taste. His flower pictures, for which he received a diploma, were very beautiful studies. The particular picture selected for a diploma was a bunch of Washington roses; but we think that the cluster of orchids was equally handsome. Here again we must find just a little fault with the tones of the prints—they were slightly heavy and flat.

Mr. W. H. Sanford showed a number of landscapes made upon 6½ x 8½ plates that were well done. We cannot find any fault with this exhibit, as the work was very good in the photographic parts, and the subjects were pleasing.

Mr. L. D. Mapes had a large number of seaside views, 3¼ x 4¼, that were pretty and uncommonly life-like. This work was some of the best we have seen in small pictures. Many of the views were exceedingly pretty, and the clear, sharply-cut pictures showed good instantaneous work and fine management of the negatives.

Mr. Robert Baker seems to have a decided taste for detective camera work. About twenty-five of his views, taken with this little instrument, embraced streets scenes, bits of architecture, and landscapes; and all were well done. In clear, sharp work, this display was among the best of those showing instantaneous work.

Mr. H. N. Tiemann showed a number of 5 x 8 prints which were mostly views and instantaneous pictures. As pictures they were clear and sharp, and often quite artistic. The photographic work was very good, except a very little flatness in the toning. This last defect was only seen in a few of the prints, which were generally well-finished.

Mr. W. Chamberlin exhibited a number of pictures taken on shipboard, that were interesting scenes and very well caught. A view of the Flood Rock explosion in this display was one of the best we have seen.

Mr. S. M. Hyde had a variety of pictures—portraits, groups, views and instantaneous pictures. This exhibit was interesting from the good success shown in such a variety of work. In the portraits the tones were quite flat, but in the views and instantaneous pictures this defect was not noticed. The exhibit was an interesting one and generally well done.

Mr. H. M. Grisdale showed a large frame of unquestionably good work. They were mostly 5 x 8 pictures and the views were uncommonly artistic. Taken as a whole, we must say that in sharpness, clean and clear work, and good toning, this display was very good.

Mr. J. J. Wilson had a number of 8 x 10 views, taken on Lake George at Sabbath-Day Point. The exquisite beauty of those fine scenes are thoroughly well caught in these pictures. To pick out any picture as better than the others appeared impossible. They were a set of gems of fine photographic work.

Mr. F. A. Jackson showed a number of fine examples of both landscape and architectural work. The pictures in both these cases were of the highest photographic excellence, and we could not find one that was not artistic and well taken.

Dr. H. G. Piffard exhibited a platinotype enlargement, 18 x 22, from 4¼ x 6½, of a flash of lightning, which was a good piece of work of this character.

We understand there were also exhibits by Messrs. D. H. Walker, W. I. Lincoln Adams and H. Edwards Ficken, but we did not see any pictures with their names on them, and therefore they will escape our censure.

In the latter part of both evenings lantern slides by the following competitors, Prof. L. H. Laudy, of Columbia College, Messrs. Randall Spaulding, Wm. Chamberlain and James E. Brush were thrown upon the screen by President Beach with the society's lantern, and were critically examined by a large audience.

The slides exhibited by Prof. Laudy were of a technical character, embracing microscopic objects, line work, engravings, spectrum analysis, astronomy and snow-flake crystals. He also had duplicate specimen pictures made upon wet and dry plates, which, when compared on the screen, showed a difference in clearness in favor of the wet plate. Mr. Spaulding's views were of a purple tint, some of which in clearness and picturesque qualities showed progress.

Mr. Chamberlain's pictures were excellent; one of the Flood Rock explosion and a sloop at anchor in the East River being particularly noticeable for their artistic merits. An Astoria church partially covered with ivy, resembling some of the English churches, attracted attention.

The slides made on dry plates, exhibited by Mr. Brush, exceeded, in their fine warm brown tone, clearness, and picturesque and artistic qualities, all of the others which had preceded him, and when exhibited in succession on the screen elicited much applause. His collection embraced a picture of a little girl upon a white pony, which was accorded a diploma, and views around the Delaware Water Gap and Hudson River, and a fine picture of a dog.

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THE INTERNATIONAL PHOTOGRAPHIC EXCHANGE.

To the Editors of the Bulletin.

It may interest many of your readers to know that the above "Exchange" has been successfully started, having some twenty members in this country, and a like number in England. On the 11th of November, I received from Mr. Henry Smith, who is the London manager, 217 plates, and on the 28th ult. I shipped to him by the steamer Oregon, 214 plates. I am now having printed a catalogue of the English pictures, many of which are extremely picturesque and excellent, representing, as they do, views which cannot be purchased. It has been our purpose to broaden the scope of the Exchange, and to include ordinary photographs on paper, as well as those on glass, should any members desire them.

The plan of the "Exchange" in this country in regard to the English pictures, will be to keep the original plates permanently in one place and send to each member in succession an album containing a print from each plate, together with a printed catalogue. Each plate is numbered, and a brief printed description of the view will accompany it.

Each member then selects from the album such pictures as he desires copies of and reports the same to the manager, who sends to the member duplicates in the shape of exposed, but undeveloped, dry plates. The member receiving the plates develops them at his convenience, and thus at a small expense obtains a series of pretty lantern transparencies, which will be a source of pleasure to himself and friends in giving entertaining and instructive lantern exhibitions. Gummed printed labels are to be bound in the catalogue, so that they can be put on the finished slides.

I am about preparing the preliminary album, and will be able to report at some future time concerning the further success of the scheme. American members are required to furnish ten good negatives or slides, every six months, of views of pretty scenery or of anything which is of general interest. I purpose sending another consignment of plates to England in April, 1886, and should be glad to swell the membership of the Exchange, if possible, to thirty. The Exchange is limited exclusively to amateurs. I shall be pleased to hear from any one interested in it.

F. C. Beach,
Manager of the American Branch,
361 Broadway, New York.

Henry Smith,
Manager of the English Branch,
Windshade,
Friern Park,
North Finchley, N., Eng.

COLORED MEDIA FOR THE PHOTOGRAPHIC DARK ROOM.

[Read before the American Academy of Arts and Sciences.]

BY PROF. WILLIAM H. PICKERING.

Since the advent of the gelatine dry plate, many photographers have complained that their eyes are injured by the dark red light generally used in development. Considerable discussion of this subject has been aroused of late, but the only experiments made, as far as can be learned, have been to determine how much plates fog when exposed at the *same distance* to the various media tried. The experimenter then examines some object at that distance, and if he thinks he can see it about as well, and the plate is less fogged, the medium is pronounced an improvement.

In order to obtain more satisfactory results the following problem was proposed—For a given distinctness of vision, what medium, or combination of media, will give the least fog on a gelatine plate? In order to determine at what distance from the lights equal distinctness of vision was obtained, a negative having some fine markings upon it was held at such a distance from the various sources that the details were just distinguishable from one another. Different portions of a sensitive plate were then exposed at these distances, one after another, to light coming through the different media, and the plate was then developed. Exposures with both daylight and gas-light as sources were made on the same plate, and, as was to be expected, those made by daylight were much the most fogged. If more colored glass was used, the daylight was too faint. So, for this reason alone, gas-light would be preferred. Add to this, that, if the gas-flame be placed at the bottom of a properly constructed flue, it will serve to ventilate as well as light the dark room; and also that it can be used in the evening and on dark winter afternoons when daylight is out of the question. Moreover, since the gas-flame is much more uniform in brilliancy, it is correspondingly easier to determine when a plate is properly developed, and fewer plates are lost in this way.

Experiments with the following media have been made, and are numbered in the second and third columns in the order of their desirability. It will be noticed that there are five media which with gas-light give better results, *i. e.*, less fog, than the best medium with daylight. In the second series the third column gives the distance in inches in each case at which the fine details were visible from the gas-flame. No medium is wholly satisfactory with daylight unless it contains red glass or paper. The window used with the gas-light measured six by seven inches, and was situated fourteen inches from the gas-flame. The window used with daylight measured five by five inches. Direct light from the clouds was used. The plate was developed in the first series with oxalate, and in the second with pyro and soda developer.

First Series.

Colored Media.	Gas.	Sky.
Red and yellow glass........	1	12
Red and ground glass.......	2	6
Post-office paper...	3	14
Red glass.................	4	8
Yellow glass double.........	5	16
Yellow and violet glass......	7	18
Carbutt's red paper.........	9	10
Red glass double............	11	13
Yellow and green glass......	15	17

Second Series.

Colored Media.	Gas.	Inches.
Canary paper double........	1	8
Golden fabric double........	2	29
Red glass..................	3	38
Golden fabric single......	4	58
Red, yellow, and ground glass.	5	11
Red and yellow glass........	6	22
Canary paper single.........	7	19
Post-office paper............	8	15
Yellow and green glass......	9	41

It was found that ground glass transmitted fifty-five per cent of the light from a gas-flame coming through red glass, while it transmitted only about nine per cent. of daylight under similar circumstances. Its effect is therefore similar to yellow glass. The fact that the yellow-violet combination was so satisfactory with the gas-flame was probably due to the capacity of the yellow to cut off the small amount of violet emitted by this source, while it was quite inadequate to destroy it in the case of daylight, as is indicated by the figures. The precise order here given is not insisted on, but only the general sequence, as in the case of most of the media there was very little difference in their desirability, and sometimes the position of two media on the list would be reversed by a negative. One fact was brought out, however, with great distinctness in all the series, and that was the great inferiority of the yellow-green combination. This was, of course, to be expected, but as many photographers still use this medium in their dark rooms, it was considered desirable to include it in the list, merely to show its inferiority. Although in the second series, canary paper double seemed to give the least fog of any of the media, the light transmitted by it proved to be so faint that it was quite inadequate for satisfactory illumination of the dark room; and, owing to its opacity, some doubt was cast on the accuracy of the observation. The second medium on the list has therefore been selected as the best practical one to employ with gas-light illumination. Its color is very pleasant to the eyes, and being translucent, instead of transparent, it lights the whole room in a very satisfactory manner. It is advisable to place it behind a sheet of glass, in order to protect it from being soiled by the chemicals employed. If one is obliged to use daylight as a source of light, it is probable that a sheet of red glass in connection with one or two thicknesses of golden fabric would form as satisfactory a combination as any.

Experiments were next made to determine how bright a light is permissible with the medium adopted. The fish-tail burner which was used on the gas-lamp was placed fourteen inches behind a double sheet of golden fabric measuring twenty-four by sixteen inches. An extremely sensitive gelatine plate was placed at a distance of twelve inches in front of the medium, and a portion of it exposed for one minute. It was found that if the gas-flame measured only one inch in height, not the least trace of fog was produced by the exposure. This is too faint a light for satisfactory use, however, and as a very minute amount of fog does not injure a negative perceptibly, and the direct exposure to the light in actual practice is much less than a minute, the flame is turned up to a height of an inch and a half or two inches for ordinary development. By this light one can readily see to read the finest type, and the light pervading the whole room is very satisfactory. After a short exposure to it, in fact, it seems almost like white light.

In this connection may be mentioned a device which has proved very useful as an auxiliary in enabling one to judge of the proper development of a negative. A square hole, measuring an inch and a half on a side, is cut in the golden fabric, and a piece of red glass inserted between the two thicknesses. If a negative be now held near this hole, a red square of light is cast upon it. This square can be seen even when the lights of the negative are quite intense, and by noting its distinctness, one can judge of the opacity of the high lights as accurately as he can of the details of the shadows of the picture. If the high lights reach their proper intensity first, he develops for the shadows, and *vice versa.*

As the whole question of the proper medium to use resolves itself merely into what part of the spectrum to employ, red, orange, or orange-yellow, and all three of these yield nearly equally good results, it is evident that no important improvement can be made in the future. But as the orange-yellow is much the pleasantest light of the three, and seems to give rather less fog than either of the others, it is the color to be recommended. Any medium which will transmit this color will be found satisfactory, but golden fabric is perhaps as convenient as any.

A very portable form of lantern to be used when traveling consists of a strip of golden fabric a foot wide by two and a half in length. When one wishes to use it, it is rolled into a cylinder a foot long and five inches in diameter, and pinned. A kerosene lamp with the wick turned low, or a candle, is then placed inside, and the lantern is complete. The circle of white light formed on the ceiling is not bright enough to do any harm. The lantern is set several feet away from the exposed plates, and they should in general be protected as much as possible from direct illumination. There is then plenty of light, and yet not the slightest danger of fog.

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[*From the Photographic News.*]

HOW TO SUCCEED IN TAKING GOOD PICTURES ON GELATINE PLATES.—No. VI.

BY S. R. BOTTONE.

C.—*How to Develop Pictures of Unknown Exposure.*—It is in cases such as these that the photographer shows his greatest skill. Here is wanted not only general knowledge, but quickness and a ready appreciation of what is taking place.

The operator must have at hand:

1st. Stale ferrous oxalate solution.
2d. Strong ferrous oxalate solution.
3d. Potassium bromide solution, 1 in 20.
4th. Water.

He then proceeds as follows:

Having poured a sufficiency of stale developer into the developing dish, he prepares a similar dish, in which he places a like amount of weak potassium bromide solution, made by mixing 1 part of the third solution with 4 of water, so that it contains about one per cent. of bromide. This dish must be placed close alongside the developing dish.

The plate is then removed from the dark frame, and plunged into the weak developer, the operator watching carefully all the time while rocking. Should the picture appear at once, he must *instantly* take it out of the developer and plunge it into the bromide solution, where he may leave it for a few seconds while he adds a few drops of the third solution (potassium bromide) to the weak developer. The exact amount to be added will depend very much upon the rapidity with which the image appeared; if it shows itself immediately on immersion, then 1 part of bromide solution to 3 of developer will not be too much. Should thirty seconds elapse before the image appears, then no bromide need be added until the picture shows signs of "graying" in the shadows. It may then be placed in the adjoining bromide dish, while an eighth or even a twelfth part of bromide solution is added to the developer. The plate is then to be returned to the developer, and development continued until printing density is obtained, *provided that the shadows do not get veiled.*

Should the slightest tendency to veiling show itself, the plate must be instantly removed from the developer, again plunged into the bromide, and fixed. It is better to intensify by an after process, a thin, but clean image, than to spoil the shadows by pushing the development, which always results in a negative giving a flat, poor print.

If one minute elapses before any image shows itself, no addition of bromide must be made; but the plate must be kept rocking for another minute or so, breathing on it from time to time as the wave of solution uncovers the plate.

If no image appears after the lapse of three minutes, the stale developer is to be poured off, and replaced by a sufficiency of freshly-mixed developer of normal strength, viz.:

Sat. sol. ferrous sulphate	1 part.
Sat. sol. potassium oxalate	3 parts.

The image, unless the plate has been very much under-exposed, will now shortly begin to appear. Should it appear but slowly, after rocking and breathing on for a few minutes, it may be covered and set aside for five minutes. After this interval it may again be visited, again rocked, and if any improvement appear, the development allowed to continue for another five minutes, and so on for half an hour. Should the picture now show itself pretty vigorous, but somewhat wanting in half-tone, the addition of one drop of ordinary fixing solution (sodium thiosulphite, hypo) to each 4 ounces of the developer, will, if any half-tone exist in the picture, bring it out.

As stated in the beginning of these articles, it is almost impossible to get a good printing negative from a plate that is much under-exposed, for it is evident that it is impossible to get an image on a plate where none is impressed. How nice it would be were it otherwise! We should only have to wish, say, for a portrait of the defunct Roger Tichborne as he appeared on board the Bella just before the wreck, and taking an unexposed plate, with a sufficiently powerful developer, bring out those lineaments which would set at rest many a disputed point.

It is therefore better that a picture should receive rather more, than less, exposure than is absolutely necessary to impress every portion. It must, however, be borne in mind that it is very seldom that all parts of a picture receive the correct exposure. This is specially the case with views. Either we wish to secure the distance—then the foreground must be under-exposed; or we expose for the foreground—and then the distance is over-exposed. So we must mix brains very largely with our developers and with our exposures.

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[*From the Photographic News.*]

SODA DEVELOPER WITH AN ADDITION OF AMMONIA.

BY DR. J. M. EDER.

This developer is a small but practical modification of the usual soda developer, and it tends very much to give negatives of a grayish-black color which approximate very nearly to the tint of wet collodion plates, or of gelatine plates developed with oxalate developer. This developer was originated by Schäschek specially for the gelatine plates of Eder and Plener, but it is also well adapted for most other emulsions.

The developer is prepared as follows:

A.

Distilled water	1500 c.c.
Neutral sulphite of soda	100 grams.
Pyrogallic acid	15 "

B.

Distilled water	500 c.c.
Pure crystallized carbonate of soda	50 grams.
Strong ammonia solution	2½ c.c.

Both solutions are to be kept in well-stoppered bottles. A will keep good for two or three weeks; B for several months.

For use, one mixes 100 parts of A with 20 parts of B, and as this mixed developer will keep for a day in a well-stoppered bottle, sufficient for a whole batch of plates may be mixed at once. In this developer the image should appear in ten to fifteen seconds if the exposure has been correct, and the development should be completed in four to six minutes.

If over-exposure is feared, the developer is diluted with half its bulk of water, or a commencement should be made with some of the developer which has been used for previous plates.

If, on the other hand, it is desired to force the development, there is added to each 100 c.c. of the developer, 2 to 5 drops of the following solution:

C.—(*Accelerator.*)

Strong ammonia solution	50 c.c.
Water	150 "

On the other hand, the developer may be made more active by increasing the proportion of B.

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[*From the Society of Arts Journal.*]

ELECTRICAL ILLUMINATION OF OBJECTS FOR PHOTO-MICROGRAPHY.

BY DR. H. VAN HEURCK.

THE author observes that the electric light enables the observer to see, without difficulty, details which are invisible, or but imperfectly visible, with ordinary means of illumination. The reason he gives for this is, first, because the electric light contains more blue and violet rays than the light of lamps or gas; and secondly, because it has a specific intensity considerably greater than other artificial light, and therefore permits the use of much more oblique rays. The results obtained have been confirmed by Dr. Von Voit, of Berlin, Dr. Stein, of Munich, and Professor Max Flesch, of Berne, who have satisfied themselves that the incandescent form of electric light affords the illumination *par excellence* of the micrographer.

The electric illumination of the microscope has entered upon a new phase through the Trouvé apparatus, which can be used for the most difficult investigations in micrography and photomicrography. The battery consists of a small ebonite box, the inside of which is divided for two-thirds of its height into six compartments, communicating at the bottom by a small aperture between each. The elements, each consisting of two rods of amalgamated zinc placed between three carbon rods, and attached to the cover, being coupled in tension, and may be let down into the liquid, or withdrawn therefrom, or more or less immersed according to the power required at the time.

The illuminating apparatus, attached to the front of the battery, or made to slide with universal joint on a standard so as to throw its light in any direction desired, is the Hélot-Trouvé photophore, originally devised for surgical operations and the examination of the cavities of the body. The photophore consists of a nickelized brass tube, in which the incandescent lamp, of special form, with a straight filament, occupies the middle. At the back end is a reflecting mirror, and at the front a condensing lens with adjustment, by which converging, diverging,' or parallel rays may be obtained. As the light from the reflector might be objectionable in certain very delicate observations, a small blackened disk is added for covering the reflector at will, and a diaphragm may be placed on one or other side of the lens for intercepting the light from its edges.

The battery is capable of maintaining the lamp for two hours, producing a light which may be utilized in certain cases of photo-micrography, but which is much too intense for ordinary microscopic research. By a slight modification of the battery, however, by which only three or four of the elements are coupled and the rest added as the battery becomes exhausted, or by employing a lamp of slighter power, the exact degree of light required may be obtained. The battery evolves no fumes, and the expense of maintenance is very slight. The charge including loss of zinc, costs 2d., that is to say 1d. per hour, or a halfpenny an hour if the small Stearn lamp be used.

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VIEWS ABROAD.

THE British Association meets at Birmingham next year, when Sir J. W. Dawson, of McGill College, Montreal, will preside. The metropolis of the Midlands intends to make a great effort on this occasion.—*Amateur Photographer.*

DOCTORS should be careful when they prescribe publicly. In the August number of the *North American Review*, J. C. Peters, in speaking of mercury bichloride, stated that "a wineglassful, or more, of a 1 in 500 solution, can be taken with impunity." In the September number he writes in great trouble, saying that the quantity named, even of a 1 in 5,000 solution, would be dangerous. The mistake arose through a misprint in a work of reference of *grain* for *gram.* Now the gram is equal to 15½ grains. Two lessons here—always write and print the latter word gramme; and, in the second place, let us try to make some united effort for the universal adoption of a single system of weights and measures. —*Amateur Photographer.*

MEN who are literary—and nothing else—should not meddle with scientific terms. They may come to grief. Here we have the editor of the *Pall Mall Gazette*, and another gentleman, a correspondent of the *Times*, describing Langley's bolometer as a new instrument intended to gauge the *bowler's* merits at cricket! It is believed that some American made a bad pun, and our two friends fell into the tap! Of course the bolometer is an instrument which measures heat—an excessively delicate thermometer, in fact.—*Amateur Photographer.*

THE Art Committee of the Albert Palace, Battersea Park, are collecting pictures, photographs, and engravings representing Old London and its environs. Mr. A. Borgen has special charge of this matter.—*Amateur Photographer.*

THERE can be no doubt as to the great progress and popularity of the camera. The other day we mentioned that Lulu, the famous gymnast, had returned from the Kalahari with dry plates by the hundred, which he is now developing. Lulu photographed lions "in action" and on the war-path. The gallant Cameron was a deft hand with the camera; and now Capt. Peters writes to the *Amateur Photographer*, to say that during the late campaign against the rebels in the northwest of Canada he obtained some photos that have never yet been equaled. "I carried," he says, "a Marion academy camera on my saddle through the whole campaign, obtaining about sixty splendid pictures, 4¼ x 4¾ inches, including about a dozen taken during the battles of Batoche and Fish Creek, all under fire. I have also some—about two dozen—taken while on the chase after the rebel Cree chief Big Bear, north of Fort Pitt, on the North Saskatchewan River. I would have inclosed you some of those actually taken in action, but unfortunately they are out of my hands at present. I do not think that any photographer has yet accomplished a picture under fire. One of mine was taken during a volley from the rebels' pits, about 150 yards distant."—*Pall Mall Gazette.*

MR. W. B. TYLER writes to us from San Francisco, under date September 5th: "Last week I was asked by the managers of the Grand Opera House whether it would be possible to obtain a photograph of the transformation scene during the performance of the spectacular play of 'Undine' at their theater? My answer was that I did not know, but that I would make the experiment. Accordingly, on Wednesday evening last, I set up my inoffensive-looking detective camera in a stage-box of the Opera House, and waited 'further developments.' I had given no instructions as to lights or the number of seconds I desired the curtain held, and so had to take things as I found them. Two exposures were made, one of a ballet tableau, and the other of the transformation scene. The former received eleven and the latter nine seconds exposure. The stage was lighted by four calcium lights, two being placed in the first gallery of the theater, and two in the front wings of the stage. Besides this, the gas was turned on full force. Both exposures were successful, though a trifle under-timed. During the transformation scene red lights were burned at the wings, which, strange to say, did not seem to decrease perceptibly the actinic power of the light. The audience did not notice the camera, and were unaware that anything out of the common was taking place. Next week the experiment will be repeated, on a larger scale, from the mezzanine boxes. Three or four large cameras and powerful lenses will be provided, longer exposures given, and the lights differently arranged, if possible, and a special and exceedingly rapid emulsion prepared for the occasion by Dr. Passavant. On Wednesday night I used quarter-plates (Passavant's C. I. P.) and a 5½-inch focus Darlot Rapid Hemispherical Lens, with full aperture, developing with 'pyro' and potash. Will send you full particulars of future experiments and details of working in my next letter."—*Amateur Photographer.*

PHOTOGRAPHY IN WAR.—At the Simla United Service Institution, Lieut. O. Wheeler, of the Intelligence Branch of the Quartermaster-General's Department, gave an interesting lecture on photography and its military uses. Sir Charles Macgregor was in the chair. In the discussion which followed, Colonel Crookshank adverted to the use made of carrier pigeons in conjunction with micro-photography during the siege of Paris. Single pigeons had, with the aid of this art, conveyed messages containing 150,000 words, which are about as much as are contained in a fair-sized book. Sir Charles Macgregor observed that, though many photographs were nowadays taken during campaigns, the practical utility of photography for military purposes depended largely on the possibility of transferring its *role* from the rear, its present position, to the front of an army operating in the field. The possibility of this again depended on the portability of the apparatus, which would require to be reduced to at least eight pounds before photography could be effectively employed on such work as a reconnaissance, where its accuracy gave it a great advantage over sketches executed by hand.—*United Service Gazette.*

IT was suggested very reasonably, not long ago, that a photographic judgment as to the results of horse races might be obtained. The dictum of a judge is final; but even that infallible personage has occasionally to pronounce his verdict in favor of a dead-heat. Now a dead-heat is not impossible; but it is almost infinitely improbable. The term is applied loosely to cases where the human eye is unable to detect any appreciable difference between the leading horses opposite the winning-post. But the photographic eye (not of Chicago) can do better than this; it can produce an exact and unimpeachable record.—*Amateur Photographer.*

THE nebula in the constellation of Andromeda is one of the few which are visible to the naked eye. Prof. Schur, of Strasburg, noted a change in the appearance of this body, and telegraphed at once to the observatory at Vienna, in order that Mr. Grubb's grand telescope, recently erected there, might be directed to ascertaining what was taking place. With this instrument a new star, of the seventh magnitude, was plainly seen in the center of the nebula, where no star was before. No such event has ever previously been recorded in connection with a nebula, and the further investigation of the problem by Mr. Huggins, and our other great spectroscopists, will be looked forward to with keen interest.

PROF. CHEVREUL, the famous French chemist and physicist, attained the age of one hundred years, on August 31st. His researches on light and on color have been of service to photographers, but to many of the industrial arts his work has been of vital importance. He published his first scientific paper in 1806.—*Amateur Photographer.*

Apropos of negroes, here is a characteristic court scene.

Judge (to darky witness).—"Do you know the nature of an oath?"

Witness.—"Sah?"

Judge.—"Do you understand what you are to swear to?"

Witness.—"Yes, sah; I'm to swear to tell the truf."

Judge.—"And what will happen if you don't tell it?"

Witness.—"I 'spects our side 'll win the case, sah."—*Amateur Photographer.*

PHOTOGRAPHY AT KEW OBSERVATORY.—One of the most interesting of the observations made at the observatory, is that for determining the height and speed of clouds, which, by an extremely nice arrangement, are simultaneously photographed from two points half a mile apart. The cameras are placed one on the observatory terrace and the other one on a pedestal in the park half a mile away. The instaneous drop shutters of the two instruments are connected by a wire, and caused to act simultaneously by an electric current. The cameras both being focused on a given cloud the operators signal "all right" by means of flags. The one at the observatory then breaks the contact, and the shutters automatically drop, exposing the plate, and rise immediately on the wire being united again. By these means distinct views of the clouds are obtained from different points, and the actual distance and rate of speed are afterwards calculated. In the upper part of the observatory is the observation room, containing a large telescope used for recording the spots on the sun, which are automatically photographed.—*Globe.*

AT a recent meeting of the British Association, the great services rendered to science by Major (now Lieut.-Col.) Waterhouse, were fully recognized. The President of the Geographical Section (Gen. J. T. Walker) spoke at length of the splendid work done by the Survey of India, specially referring to "Lieut.-Col. Waterhouse, who has for many years superintended the office in which photography is employed in connection with zincography and lithography for the speedy reproduction of the maps of the Survey. Col. Waterhouse has done much to develop the art of photogravure, whereby drawings in brushwork and mezzotint may be reproduced with a degree of excellence rivaling the best copper-plate engraving; and almost as cheaply and speedily as drawings in pen and ink are reproduced by photo-zincography."—*Photographic News.*

EVERY ONE does not appear to be aware that a perfectly matt surface may be obtained on a gelatino-bromide enlargement, by simply squeegeeing it down, while wet, on to a piece of ground glass and allowing it to dry thereon. The surface will be considerably modified according as the glass is coarsely or finely ground. The print should not be dried before it is put upon the glass, as the second wetting does not appear to have the same effect. It is almost needless to say that the surface of the glass must first be waxed in order to prevent the picture from sticking.—*British Journal of Photography.*

PHOTOGRAPHIC work of the present day is a vast improvement upon what it was a dozen years ago; but, even now, the examination of any ordinary collection of portraits in an album suggest that photographic paralysis also (if we may be allowed to imitate a professsor) must prevail to an alarming extent; for there is bound to be included in almost every album a set of pictures the exact counterpart of each other in position, arrangement and general style, and differing in no respect whatever from the efforts of a quarter of a century ago. We were much struck with the remark of a well-known photographer, which exactly describes the men who produce these pictures and their kind of work. "Oh, yes," he said, "they are very good photographers, but not much use to me; the same style of negative they took a dozen years ago, the same poses, the same arrangements, no change of any sort—mechanics!" This is still true of a large number of photographers, principals and employees; but we must point out to them that every year it will become more difficult for such a class to thrive, or even live. Not only has photography, from an artistic point of view, progressed, but the ubiquitous amateur can, now-a-days, frequently produce good work, and, if he be a cultivated man of artistic taste, he will surpass all these mere machines, and he will aid in improving the public taste, and raising the status of the art, thus increasing the power of appreciation of the public for good work, while leaving the artistic drones in the lurch. Hence we say, let all endeavor to progress, and avoid indications of photographic paralysis being seen in their work, and so render the much maligned amateur an aid rather than an hindrance to business, looking at the matter in an £ s. d. aspect.—*British Journal of Photography.*

IN connection with the subject of the expansion and contraction of paper, a correspondent suggests that a want of sharpness, corresponding with that existing in the negative, which is frequently met with, may arise from the paper being placed on the negative when it is in an exceptionally dry condition, while, at the same time, the pads of the printing frame are not equally devoid of moisture, hence the paper is caused to expand during the printing. This may be correct, for it stands to reason that if the pads, or backs of the printing frames, contain ever so slight a degree of moisture, the paper will certainly absorb some of it, and consequently expand sufficiently to cause a noticeable difference in the sharpness of the resulting print. If the pads be really damp, the paper, it is well known, will wrinkle up, however strong the springs of the pressure frame may be. A fact too frequently overlooked by printers is, that the paper and the pads of the frames should always be in a corresponding hygroscopic condition in order to maintain absolute contact with all portions of the negative during the time it is printing.—*British Journal of Photography.*

REDUCTIVE PROPERTIES OF PYROGALLIC ACID.—Cazeneuve and Linossier introduced a boiled solution of ferrous sulphate, and a solution of pyrogallic acid in boiled water, into a tube filled with mercury. Air (with its oxygen) being thus excluded from the mixture, no color was produced; but the introduction of a little oxygen at once caused a blue coloration. The oxygen combined with the pyrogallic acid, and the blue coloring matter is the product of the oxidised pyro acting upon the ferrous salt.—*Photographic News.*

BY virtue of the Patent Laws Amendment Act, which has just been published, those applications for patents which have been abandoned in their first stage will not be open for public inspection.—*Photographic News.*

FOR the depth of despair in regard to the photographing of children, commend us to the operator who, in the recesses of his dark room, after a twentieth attempt to secure the features of an unruly youngster, thus delivered himself: "Joshua commanded the sun and moon to stand still, and he was obeyed; but I'm hanged if he'd have succeeded with this young imp!"—*Photographic News.*

IT is odd how such a little thing as a photograph serves to set a fashion. We read in a fashion journal that "since the appearance in many shop-windows of a certain photograph of the Duchess of Albany and her baby son, in which the cot of the tiny child formed a prominent feature, a new interest seems to have been aroused in the matter of the decoration and construction of babies' cradles generally." Here, obviously, is a hint which the portrait photographer should not fail to heed. Why, among his "properties," should be not include a tastefully-decorated cot? Babies look far prettier in their cradles than anywhere else, and are certainly far more comfortable. The only drawback is, that some babies are extremely knowing, and have a strong objection to entering a cot other than their own. But this difficulty does not occur in every instance, and might be overcome by coaxing. We know a cynical photographer who advocates the use of chloroform where babies are concerned; but we scarcely go as far as this.—*Photographic News.*

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[*From Our Corner.*]

THE LUMINIFEROUS ETHER.

BY LAWRENCE SMALL.

WHEN Newton had shown that bodies tended to approach each other owing to the action of force, the strength of which between any two bodies increased directly as the product of their masses, and inversely as the square of the distance between them, some explanation of the force was made necessary and Le Sage propounded his theory of gravity. Le Sage proposed to explain gravitation much in the same way as we now account for the pressure of a gas. We know gaseous pressure to be the effect of molecular motion. The molecules of a gas are not fixed, but move in all directions in straight lines until they are interfered with by other molecules with which they come in collision, or until they are stopped by the objects against which they strike, or by the sides of the containing vessel. When a molecule strikes against another, or against an object, it rebounds and moves off in another direction. The molecules of air dashing in incalculable myriads against a body produce by their bombardment an effect equivalent to a continuous pressure, for although the molecules as they strike the object rebound, other molecules immediately succeed and maintain the effect. If this battering took place on only one side of a body it will readily be understood that there would be a tendency for the body to be driven along. Le Sage supposed that besides the ordinary matter of which we were cognizant, there existed in space a more refined kind of matter, which consisted of corpuscles, much smaller than the molecules of grosser matter, moving about rapidly in all directions. A solitary body in space would thus be battered equally on all sides, and there would be no tendency to motion. But when a second body is introduced there is instantly a sheltering of each by the other on the inner sides, while the sides turned away from one another are exposed to the full hail of these corpuscles. Thus there is a greater tendency for the bodies to be driven together than for them to separate, and the difference of the two tendencies is the intensity of the force of gravity.

This corpuscular theory of gravity makes it necessary to suppose that bodies are perfectly permeable by the corpuscles, because the strength of the force is known to depend on the mass, and not on the extent of the surface of the body; and thus the theory requires that every molecule of a body should be subjected to the full force of the bombardment. Very probably this is not the true theory of the cause of gravity, but it shows us that, to account for gravity, we must suppose that interstellar and even intermolecular space is not void, but is filled with matter the motions of which produce pressure. Another consideration compels us to believe that space is occupied by matter, and that is the fact of the transmission of light from the sun and stars.

Matter is only affected by other matter in motion, so that whatever can affect the retina must be material; and light must either be a moving substance, or the motion of matter extended in space. Sir Isaac Newton believed light to consist of extremely small bodies (corpuscles) which streamed with great velocity in all directions from a shining body, and which, entering the eye, and impinging on the nerve ends of the retina, produced an effect which became in the brain the sensation of light.

Huyghens conceived light to be due to waves in the medium which Descartes had supposed to fill all space. Newton, however, opposed the undulatory theory of light with great vigor, basing his chief argument on the fact that when a wave meets with any obstruction, it divides, passes the object on both sides, and forms again, but with diminished height, behind it. But light apparently does not bend round objects, but seems to proceed in perfectly straight lines. Therefore, said Newton, light is not due to wave motion, and the corpuscular theory is true. This argument was shown to be false by the experimental demonstration of the fact that light can and does bend round objects, though the waves (as in the case of those on water) have a much diminished amplitude of vibration, and (with the exception of those confined to a small angle of bending) are consequently unable to excite vision. Therefore, although the ether waves are deflected (or diffracted), we are unable to see, as well as hear, round a corner. The English physicists unfortunately accepted the corpuscular theory of light on the authority of Newton, even in the face of facts that would have convinced Newton himself. It was not until the end of the last century that the truth of the undulatory theory was established by the labors of Dr. Thomas Young, and every newly discovered fact since then has served as additional proof of the existence of interstellar ether.

What, then, is ether? It is a substance extended in space as far at least as the furthest star visible by telescopic aid. From the character of the vibrations we know that the ether is not a gas, for no set of disconnected molecules can transmit vibrations such as are transmitted by the ether. Neither can they be transmitted by a liquid, for the medium must possess rigidity or elasticity of figure—that is, it should tend to regain its shape after distortion. The extreme mobility of the ether forbids us to regard it as an ordinary solid, for it closes up completely after a body of the grosser matter has passed through it. But even this property may be possessed by a solid. If a leaden bullet be placed on a thick cake of Burgundy pitch, the bullet will gradually sink into the solid pitch, and in the course of a few months will have disappeared entirely beneath the surface. The only apparent difference between this phenomenon and that of the closing up of the ether after a body has passed through it, is the time that is required; in the one case months, and in the other the minute fraction of a second, being necessary. The ether may best be regarded as in a state intermediate between solid and the liquid. We are not entirely unacquainted with such a body. A jelly, by the constant addition of water, may be made to pass a long series of gradations from the solid to the liquid state, at no one of which can we say, "Here the solid state ends and the liquid begins." We may picture the ether as a highly attenuated jelly filling all space, in which material (as distinguished from ethereal) molecules are imbedded. It is believed to be a perfectly continuous or homogeneous body—that is, it is incapable of being resolved into molecules or atoms. The ether has, of course, a definite rigidity and a definite density on both of which the velocity of wave propagation depends. The greater the density the less the velocity, but the greater the elasticity the *greater* the velocity.

The velocity of light and the density and elasticity of ether are so connected, that if two are known, the other can be determined. Sir W. Thompson has, from certain data, made an estimation of the density of the ether, which makes it almost infinitesimal. Yet, small as the density of the ether is, it is enormous when compared with that of air at (say) a distance of 4,000 miles from the earth's surface. Knowing the density, the elasticity of the ether is easily calculated, and a value is obtained which shows that the elasticity of the ether is insignificant when compared with that of steel. Hence we may say that the great velocity of light is owing rather to the small density than to the great elasticity of the ether.

Light and heat both consist of transverse vibrations in the ether; that is, the wave motion takes place in a direction perpendicular to the line of propagation. Similarly, in waves of water, the undulation travels horizontally, while the motion of the particles of any wave is up and down.

These ethereal undulations are produced by the vibrations of the molecules of hot bodies. Heat is a vibratory motion of the molecules of a body; if a body were entirely devoid of heat, the molecules would be perfectly quiescent. The hotter the body the more violent is the vibration; or, rather, the greater the intensity of the vibration, the more powerfully it produces the sensation of heat. These vibrations disturb the ether much as a moving particle imbedded in jelly would disturb the jelly, producing waves which are transmitted with the enormous velocity above mentioned. If the vibrations of the molecules take place with a comparatively small degree of intensity, the undulations of the ether are incapable of exciting vision; but when the body is hot enough—that is, when the molecular vibrations take place with sufficient rapidity—the body becomes self-luminous, because the ether waves are now capable of affecting the retina of the eye. An iron ball heated to the temperature of, say, boiling water, can emit no light, but radiates heat only. When the temperature is raised to a certain degree it begins to shine with a dull red light; made hotter still, the light is of a bright red; and, when the heat is sufficient to melt the iron, the light is a dazzling white. When a body is heated by radiation from another, the ether waves throw the molecules of the colder body into a more intense state of vibration; when a body cools, the vibrating molecules give up their motion to the ether, becoming more aud more quiescent. This transference of motion from the ether to the molecule, or from the molecule to the ether, shows that the ether is not frictionless. The same fact is indicated by certain stellar phenomena.

(*To be continued.*)

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[*From the Philadelphia Ledger.*]

WING FEATHERS.

HOW THEY MOVE WHILE THE WING IS STATIONARY.

Mr. Muybridge, who is photographing the motions of birds and beasts in the Zoological Garden by his "instantaneous" system, says that in his experiments he demonstrated to his entire satisfaction that pigeons, eagles, and other birds in soaring give individual movements to the wing feathers, while the wings, as a whole, may not appear to be flapping. "Some years ago," says Mr. Muybridge, "my attention was drawn to this subject of wing-feather movements in a forcible manner. I started up an eagle on a mountain peak along the Yosemite Valley. At the outset it made numerous flaps with its wings, but in flying across a valley to another peak it went for a distance of over a mile with but one flap of the wings. I was convinced that individual feather movements upheld and propelled the bird, and I can prove by the negative plates of the eagle whose flight we photographed last Thursday that my conclusion was correct."

Although he has not yet made his calculations upon the chronograph records of the eagle's flight, Mr. Muybridge says he thinks that twelve consecutive and different exposures of the bird were made in about half a second. Two series, of twelve cameras each, were operated simultaneosly, and this operation was repeated four or five times. The eagle made about two "round" flaps in half a second.

Mr. Muybridge showed the plates of twelve different exposures of one flight of the eagle. The length of the picture of the bird, from the bill to the end of the tail, was about half an inch. Mr. Muybridge said that the smaller the negative the more rapidly they can be taken. Dry plates are used. For use in the work that Mr. Muybridge proposes to publish, negatives of this size are to be enlarged into positives two inches long.

Mr. Muybridge pointed out that in the first negative, wherein the wings were preparing to rise, the feathers were spread out like a fan and separated. In that and the next negative he showed that the feathers turned so as to cut up through the air in such a way as to meet with the least possible resistance. He then pointed to the feathers in the negatives representing the bird where the wings, after making the upward movement, began to descend. At those points the feathers were turned so as to meet with the greatest possible resistance, and were at an angle that enabled the bird to move upward and forward at the same time.

Mr. Muybridge showed negatives of pigeons, and pointed out that their wing feathers moved like those of the eagle during the ascent and descent of the wings. In the pictures of the eagle the wing feathers were more widely separated than in the pictures of any of the other birds that were photographed. The quills and other parts of the larger feathers were outlined with particular distinctness in the pictures of the eagle. Mr. Muybridge says that while the results of the work done by him at the "Zoo" might to most people examining the pictures appear to be all that could be desired, yet he is not perfectly satisfied with any of it, and will continue to photograph birds that flew before his cameras previously. In order to give satisfactory exposures, he says it is necessary that the birds should fly straight across the background. It was difficult to cause them to do this, especially in the case of the wild birds. He says it will be a labor of months to figure out the curvatures of the bodies and wings of the birds, and the extent of the movements of the wing feathers. A bird's wing, like a horse's hind foot, makes a double curvature. A horse's hind foot makes a curve to advance, and at the same time curves around the forefoot before the latter leaves the ground. A bird's wing, Mr. Muybridge says, makes a corresponding double curvature, which he proposes to describe after he has finished his study of the plates and the chronograph records.

I WOULD not be without the BULLETIN for ten times its cost.

L. B. SHAW.

THE best critics of other people's actions, we have noticed, are usually those who themselves have failed ingloriously all around.—*Chicago Ledger*.

THE dearest thing a photographer can buy is *cheap* (?) chemicals.

[*From East End Bulletin*].

AMATEUR PHOTOGRAPHY FOR WOMEN.

AT the last meeting of that young but vigorous body, the Pittsburg Amateur Photographers' Society, it was agreed that ladies were eligible for membership. Applications from the fair sex are now in order. For a time few may avail themselves of this privilege, but it will not be long until the skilled amateurs of the two cities include a goodly number of ladies, and each year must find that number increasing. There are no difficulties in the way which cannot be surmounted by any young woman of intelligence and possessed of artistic tastes and instincts. And the gratification and pleasure which attends the mastering of this art will much more than compensate for the trouble and time involved. What damsel is there who would not desire to retain, in durable form, the little circle of friends and fellow students at her school? Or to secure good negatives of the scenes and surroundings of her school days, her room and recitation hall, the school itself and all the accessories of school life. In after life how these photographs will quicken and keep alive pleasant memories! Still more will it be desirable for her to secure with her own camera the portraits of the dear ones of the family circle. Not the isolated portrait that comes from the gallery of the professional, but the pretty natural group of father, mother and the rest assembled on the porch, in the doorway, or beneath the trees of the lawn or garden. Few young women are gifted with the ability to do this in oil or water color, or with pen or pencil. But very many can with the camera do wonders in portraiture or view photographing. The inventor and skilled mechanic have perfected and simplified the amateur outfit to a marvelous degree, and even the complex process of developing, toning and printing present no real difficulties. The entire outfit occupies scarcely as much space as a band-box, and is far more sightly than that useful receptacle. The amateur's outfit of to-day is as pretty an affair as a lady could wish included among the trunks and packages necessary for a summer's outing. And the pictures she can make in one summer, whether at the seaside, the lake shore or the forest camp, would perpetuate the pleasures of that period as nothing else could. Amateur photography offers a new and promising field, rich in possibilities and pleasure, for the sisters and wives of those who have already found enjoyment and profit therein, as well as for fair ones who don't possess the luxury of brothers or husband.

COLUMBUS AMATEUR PHOTOGRAPHIC CLUB.

A REGULAR meeting of this club was held on November 16th, the newly-elected officers being at their posts. Prof. N. T. LORD, *President;* Prof. W. S. GOODNOUGH, *Secretary.*

The receipt of the current photographic journals was announced and acknowledged. It was voted that the Secretary procure a sample copy of the *British Journal* and the *Photographic News* for examination, and that the annual year books be obtained as soon as out.

A motion was carried that every member should be prepared, in alphabetical order, to appear before the club, one each evening, with a contribution paper or demonstration; each person to furnish an abstract of his paper, if desired.

It was suggested that the necessary appliances for developing and carrying on other demonstrations and experiments were needed, and the President and Secretary were appointed a committee to prepare a list and estimate for the next meeting.

Members were requested to try to comply with a rule of the club that requires every one to bring a negative, and a proof or print from it, to each meeting.

Mr. W. H. Miller had some successful paper negatives and prints from them.

The matter was discussed as to whether a portrait lens, stopped down, would give as good results in making lantern transparencies with the camera as a lens of the rectilinear class, a single view or a wide-angle lens. Several members claimed that it made little difference if the portrait lens was a good one and well stopped down. The Secretary stated that in his first work of the kind, eight years ago, he had used a quarter-plate Darlot portrait lens, but could not get satisfactory sharpness, first in the negatives, which were half size ($4\frac{1}{4} \times 5\frac{1}{2}$), and all from flat subjects, as designs, drawings, etc.; and, second, in the transparencies themselves, the same being true. He tried a one-third and one-half size lens for work of the same size, but was not satisfied until he used a half-size Darlot single view lens, which gave perfect results. He now uses an 8 x 10 Dallmeyer rapid rectilinear or a Morrison 8 x 10 wide-angle, though the single view lens did the work equally well.

W. S. GOODNOUGH, *Secretary.*

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All communications for the columns of the BULLETIN *should reach us on Monday preceding the day of issue, to insure their publication at that time.*

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

DECEMBER, 1st, 1885.

President NEWTON in the chair.

The *Secretary* announced that two numbers of ANTHONY'S BULLETIN, four numbers of the *Photographic Times*, and three numbers of the *Photographic Eye* had been received; also, from Mr. O. P. Dabbs, a series of three prints illustrating the Flood Rock explosion, and two after the explosion; also from Mr. A. A. Fisk, a print of the explosion at Flood Rock.

The usual vote of thanks was passed for these donations,

The committee on stereopticon reported progress.

The report of the executive committee was read by Mr. Gardner.

Mr. NEWTON—I would say that, as the regular order of business progresses, we will dispense with all except the exhibition of apparatus. Prof. Laudy is going to give us a lecture on the uses of the stereopticon, and is going to show its progress from its primitive and crude form up to the present perfected lantern.

Mr. FISK exhibited a new camera which he said did away with the double dry plate holders, or holders separate from the camera, and combined a changing box with the camera, and power of making one, two or three pictures upon any one of the plates contained in the camera. The camera holds twelve plates. The lens is mounted on a rotating disk in front. The plates revolve upon the principle of a revolving stereoscope, turning one plate after the other until the whole twelve are brought into view.

Mr. Fisk exhibited some pictures made with this camera.

Dr. Laudy then read his paper. [See next BULLETIN.]

Dr. LAUDY explained the construction of the lantern, the source of light, the formation of images by means of a lens.

In the Marcy lantern, Dr. Laudy said there was one objectionable feature. It showed a dark field in the center of the wall, which was the magnified image of the wick. The Triplexicon he said was the best oil lantern.

Dr. Laudy obtained some curious effects by the use of the Japanese mirror, magnet, tacks and aniline, and also exhibited pictures made years ago, and some comic pictures. After this he showed a series of views illustrating the different forms of magic lanterns. The dissolving pictures made by using the two lanterns at once were then shown, after which came the pictures of the explosion at Flood Rock, by Messrs. Mason, Fisk, Pray, Gubelmann and Smith, and the exhibition closed by Dr. Laudy showing the microscopical attachment.

A vote of thanks was given to Dr. Laudy and the other gentlemen who had assisted in the exhibition, and the meeting adjourned.

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THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

SPECIAL MEETING, OCT. 27TH.—*Continued.*

THE *President* showed an improvement in a Parsell camera, which had an Eastman roll holder fitted to it. The peculiarity was that the holder was arranged to have the slide pull out at the top, instead of sidewise at the end, as was usual. Speaking of it he said: Another advantage is, that after the slide is out it is not necessary to put it back for every picture you take, because after you have snapped the shutter you only need to draw over in front of the lens a diamond-shaped cap [pointing to it], then you can reset the shutter and easily wind off the exposed paper without fear of damaging it; you are then ready for another picture. The shutter is set off by pneumatic means, or by the button at the top. Thus you see the advantage over the old holder is that you don't have to bother about pulling the slide out. Another improvement is, instead of having the alarm on the inside, which was customary in the other roll holder we had shown here a short time ago, we now have a metal disk on the outside of the holder, with a mark on it so that you can see when you have got the exposed paper across and wound up. [He then held the holder up to the andience with the slide pulled out, so that they might see the movement of the paper.] I will mark this [referring to one end of the paper], and you can see how it works. The mark on the disk points to a little pin, which we will call the zero point, and by the time this surface has been exposed, that little disk will make one revolution. The advantage of this method, especially when applied to the so-called detective cameras, over the sound method, is that you can see what you are doing, whereas in the other case the noise of people and vehicles around you when operating, will sometimes prevent you from hearing the click. While with this holder the click is absent, the same little projections are on the end of the guide roll to puncture the paper on the margin, so that we know where to separate the different undeveloped pictures. Now I will proceed to send this sheet across the exposing platform and you can see how it travels. [He winds up the reel with the key.] Now the little disk on the outside has made half a revolution, and you notice that the mark which I previously made at one end is now exactly in the center of the plate. Now it has made three-quarters of a revolution, and the mark is three-quarters round. Now I make another quarter revolution, and you will notice that the mark is on the other end of the exposing platform, showing that the movement of the paper exactly corresponds to one revolution of the disk. In answer to one or two questions asked by members, Mr. Beach stated that the roll holder, an ordinary 4 x 5 one, as purchased, had a slide come out at the side. As altered, the slide pulled out at the top; the click mechanism had been removed, and a suitable gear wheel had been substituted for it, whereby four revolutions of the guide roll made the gear wheel revolve once, which in turn rotated the disk on the outside of the case. The alteration had been made for Mr. Beach, under his direction, by Mr. Gregg. Mr. Beach had been informed that a further improvement, in the shape of an ordinary gas meter registering mechanism, would be added, enabling the operator to see on the outside of the case at a glance just how many exposures had been made.

Mr. ROCKWOOD:—If you want to duplicate that, do you send to Eastman for the roll, or to Parsell?

The *President*:—You send to Mr. Eastman for the roll holder, and have it altered here to suit your box. It struck me as being very remarkable that the Eastman Company did not see this point, and supply amateurs with just such arrangements, but it was necessary to have somebody make one in order that they might comprehend the advantages.

[Mr. Beach then took the holder apart, showing how easily it was done, and spoke as follows in regard to the cutting off of portions of the picture at the edges.]

Another suggestion that occurred to me in regard to these holders, was the foolishness of the manufacturers in making the paper so narrow, that you have to put guides here to cut off quite a little margin of the picture. It is just as easy to make the strip a quarter or an eighth of an inch wider and then cut it off, as to make it the exact size. By having it made wider, you can get the full width of the picture. The roll is four inches only, and it could just as well be four and a quarter inches. On a little roll like this you can take forty-eight pictures, one after another, after you have first drawn the slide. The apparatus is so constructed that any time whatever, after you have made a number of exposures, you can take the exposed portion of the paper off and separate it from the unexposed.

Referring to the camera, he said: Another point about the camera is this. Sometimes you want to use it for time as well as for shutter work, and you want to focus. In order to do that, we have it arranged so that you only have to pull the back sections of the box up and out, then you have an ordinary camera. The back is arranged to match the rest of the camera on the outside. This construction makes it look just like the other part of the box, so that no one would take it for a camera.

Then I would speak of another improvement that I suggested. The difficulty was that when the shutter went off, it made such a terrible click as to arouse the attention of any one at a short distance. I arranged it so that it strikes a piece of rubber, and you can scarcely hear it click at all. [He then operated the shutter.]

The *Secretary*—There have been sent by the Scovill Manufacturing Company a number of these things, which are called the Russell Negative Clasp and Drying Support. They are intended for use both in the development of negatives and for a support while they are drying. As you readily see, this can be put on a plate before it is put into the developing tray, and used to lift the plate by, and an examination of the negative can be made during development by using the clasp without danger of soiling the fingers. It is not necessary to touch the plate at all. Another point is, that after the plate is washed, it is always ready to dry the plate on. By steadying it in this way on the edge, it will dry in a slightly inclined position and there is no danger of its turning over. I have two or three of these left for distribution.

The *President*—I have received from Mr. Warnerke a sample of his improved double-coated tissue, which is intended to take the place of glass. I have made two negatives from it, which I shall be very glad to show you. I had a sample of the tissue before it was exposed, but I do not find it here. One of these negatives was exposed one second and the other two seconds. [Passes them around.] It consists of very thin paper coated on both sides with argentic bromide gelatine emulsion.

The *Secretary*—I would take this opportunity to request those members who have not already sent prints from their negatives of the Flood Rock explosion, to send them to me as soon as possible after this meeting. These prints, of course, must be unmounted, and, if you please, in duplicate.

On motion of Mr. Parsell, a special vote of thanks was tendered to Prof. Laudy, Mr. Rockwood, Mr. Fisk, and the other gentlemen who had contributed to the entertainment of the Society during the evening. Unanimously carried.

The *President*—I have also another collection of pictures which will be specially interesting to those of you who want to photograph paintings. These are what are called orthochromatic photographs of an oil chromo by the chlorophyl process. They are mounted so that you can compare the two—one is by the ortho-chromatic and the other is by an ordinary gelatine plate. I will have the secretary read a portion of a letter sent by Mr. Frederick E. Ives, of Philadelphia, Pa., explaining some of the difficulties he has met with.

The *Secretary*—Before doing that, I should like to speak of one thing; that is, that Mr. John E. Dumont, corresponding member of this society, and a member of the Rochester Photographic Society, has sent to this society the presentation print of the Rochester Photographic Society, and I would move a vote of thanks to him.

Carried.

The *President*—I would ask the secretary to exhibit to the members a very fine carbon enlargement by Allen & Rowell, of Boston, of a 5 x 8 cattle scene, made by Mr. Francis Blake, a corresponding member of this society, who is noted as being the inventor of the Blake Transmitter. This picture I happened to discover among a collection he had, and wrote him for a copy, and he kindly offered to send me an enlargement of it for the society. It represents a cattle scene in Illinois. The original negative was exposed 4½ seconds, and it is quite remarkable, with so many cattle in the picture, that all remained so quiet for that period of time.

Mr. Blake states that the negative was made at 11 A. M., cloudy, on an Eastman special plate with a No. 3 Euryscope lens, smallest stop. The oxalate developer was used.

The secretary then read the following letter from Mr. Frederick E. Ives.

2609 JESSUP STREET,
PHILA., Oct. 23, 1885.
MR. F. C. BEACH.

DEAR SIR,—The orthochromatic photographs which I send you were made with a wide angle rectilinear lens, largest stop; the exposure was five minutes on each, in direct sunlight. Some bright colored oil chromos would require only one or two minutes' exposure with same lens and light, and by using a rapid rectilinear lens I have made some perfect negatives with less than a minute's exoxposure. The plates are *relatively less sensitive in a weak light*, requiring *twenty* times more exposure under circumstances which would call for *four or five* times more exposure of a rapid gelatine dry plate. The most sensitive plates are prepared with a fresh chlorophyl solution which has been made up with alcohol tinted with eosine. But no eosine should be used in making up chlorphyl solutions which are to be kept more than a week, because an *old* chlorophyl solution gives more accurate photographs when it contains no eosine.

Lately I have had some emulsion which would not work clear, except when the tea organifier was used with it. I would therefore advise any who experiment with the process to use the tea organifier, not only because it increases the sensitiveness to light, but because it may insure better results.

It was my intention to send you a copy of the chromo from which the larger photograph was made, for comparison; but, after sending away all the copies a picture dealer had in stock, I have tried in vain to obtain any more, as they were imported, and no more can be found in this country. Before long I hope to be able to send you something along with the original from which it is made.

Respectfully yours,
FRED. E. IVES.

The *Secretary* announced that the resignation had been handed in of Mr. W. E. Partridge, Mr. Partridge having removed from the city.

The *President*—I wrote to General Newton a few days ago in regard to the pictures of the explosion that we were to present to him, and expressed the hope that we might have a photograph of himself, and a picture of his little daughter in the act of pressing the button to set the explosion off, so that we might have the whole story framed and hung up on our walls. In reply to this, he thanks me for the proofs that I sent him and for the promise of further copies, and says: "Your proposition for a half life-size photograph of myself and a picture of little Mary touching the key, I doubt not you will obtain when you are ready for them." So that I think we may be able to get up a very interesting collection if we interest ourselves sufficiently in it.

I would further state that I have received a very kind letter from Commodore Chandler, of the Brooklyn Navy Yard, giving the members of this society permission to go there between 9 A.M. and 4 P.M., to photograph such objects as we may choose; and I think, in the course of a short time, it would be well for a club of us, half a dozen or so, to take a little trip over there. There are a great many interesting historical things that could be collected which would be very useful and valuable.

I have received a very nice picture—a photograph—from Mr. Frank H. Allen, President of the Pyro Club of Norwich, Ct., an amateur club. It is a photograph of a large boulder near Norwich, said to be the largest in the world. He speaks of Norwich as abounding in beautiful picturesque spots, and invites members of this society to go there, and enjoy and photograph the scenery.

I have made one or two experiments on gelatine paper which may interest you. I have been told that you could get a very nice gloss on gelatine paper by simply rubbing it face down on glass. I tried the experiment, and found the paper adhered to the glass. Mr. Roche informs me if a little oil is rubbed over the face of the glass with a dry cloth the paper will not stick. But to-day I experimented by using a sheet of vulcanized hard rubber, about an eighth of an inch thick. I made two prints from that [holding up a negative], and both had a very nice gloss. The only difficulty is that when you come to mount these prints on card-board, using the usual paste, the gloss disappears considerably. I have brought two samples here, one to show you how it appears before it is mounted, and the other to show you how it appears after it is mounted. The negative from which these were taken was developed by the new process of two solutions, using pyro first for two or three minutes, and then potash or other alkali.

The next business will be a general discussion. If there are any questions to be asked about the apparatus or any other matter, now is the time.

Mr. Roosevelt—I should like to ask the president about the two solutions—how he manages them.

The *President*—I explained all about that at the last meeting. The general idea is to take the ordinary pyro solution and soak the plate in that three or four minutes, and then pour off the solution into a graduate, and have another graduate with water and potash in it, and pour that on, then the picture comes out.

The *Secretary*—I would like to say a word about changes of addresses of members. There have been two or three instances where members have failed to get notices of meetings or copies of proceedings that have been mailed to them. I wish to ask members whose addresses are changed from those the secretary now has, to let him know at once, or notify him in case they fail to receive copies of the proceedings when they have been duly sent out.

Mr. Dean—I would like to ask Professor Laudy about the rapidity of those shutters; the length of exposure with the ordinary gravity shutter; and the speed with which it runs with one rubber, two rubbers, and three rubbers.

Prof. Laudy—The diagram that I presented to the society gives all those calculations. The ordinary gravity shutter is about one-twelfth of a second, and corresponds to the law of falling bodies, or within a very small fraction.

I took as a standard three inches, as the sum of the two openings. Any less than that, of course, increases the speed of the exposure considerably; but in this case the shutter that I exhibited with three elastics would be entirely unsafe to use with an ordinary lens, as it would tear it from the flange. The speed of a gravity shutter is $\frac{1}{13}$ of a second; with a single elastic it is $\frac{1}{51}$ of a second; with two elastics, $\frac{1}{64}$ of a second. The highest speed that I could secure was $\frac{1}{108}$ of a second, with three elastics

At 10.30 the meeting adjourned.

The Regular Meeting

was held at No. 1262 Broadway, on Tuesday, November 10th. The meeting was called to order at 8.30, *President* Beach in the chair.

Mr. Beach urged the members to contribute photographs to the first exhibition, as it was desired to make it as large and attractive as possible. He announced a lantern exhibition for December 9th.

The *Secretary* then read some communications, and spoke of some changes made in the rules relative to the exhibition to be held on November 17th.

Mr. Beach—There has been some effort on the other side to arrange with certain hotels in localities where it is convenient and pleasant to go to, affording amateurs the advantage of having a dark room to change their plates or to develop pictures. There is a movement being made in this direction by one of our members, Mr. F. G. DuBois, who has recently been to Niagara, and who writes to me that he expects to make arrangements with the proprietor of the Spencer House there for a dark room and a lantern, so that any of our members, or any amateurs visiting there, will be sure to have a good place in which to change their plates.

I have taken pains to correspond with a number of the members of the society in reference to the question of establishing a paid janitor for the society, and, so far as I have been able to hear, a large proportion of our members favor it. The feeling of the Board of Directors is at present that our room is not quite spacious enough to carry on all the things intended, but you may rest assured that we will do all that we possibly can to provide a better place in the future, and will try to be as progressive as possible.

I also received yesterday a letter from the Chairman and Secretary of the London Camera Club, informing me that they had elected me as the first honorary member of the club (applause); and as Captain Abney is the President of the club, I think it will be proper for the Board of Directors to elect him an honorary member of this society, and it will be my endeavor to have something of that kind done.

I have to bring before you now an improved time shutter. It is an invention of Mr. Birdsall, formerly a member of our society, and at my invitation he kindly brought it here this evening that you might see how it operated. The principle is that of a falling weight. You know a drop shutter descends very rapidly, but if we have a means of checking it for certain periods of time it is very desirable. [The shutter consisted of a metal slide, one edge being provided with a rack, which, as it fell, engaged with the cogs on a small spur wheel, the latter acting upon others, thereby rapidly rotating a fan wheel similar to the train in the striking mechanism of a clock. The shutter is held in position by a small pin, which upon being pulled out allows it to fall.

The pin may be drawn by fine black thread, so the person making the exposure may be in the picture. A spring pin checks the fall of the slide.] The only peculiarity Mr. Birdsall says that he has noticed is that it attracts so much attention when you are taking a group of persons, that it sets them thinking very pleasantly and they all smile (laughter), and consequently the picture is sometimes blurred. So he sets it off three or four times beforehand, in order that they may get accustomed to the noise and the motion, but you see it works very easily. [Operating it again.]

Mr. BORMAN—Don't it vibrate the lens?

Mr. BEACH — No, because it falls very steadily.

Mr. CANFIELD—Can the time be varied ?

Mr. BEACH—The time can be varied by putting on different shaped fans. If you want to make it go still slower you can put on the large fan. These are made detachable, so that they can be pulled off. I omitted to mention that the secretary will read the names of the gentlemen who have been elected members of the society.

Active members: Irwin A. Sprague, Richard H. Lawrence, J. Wells Champney, George H, Young ; Associate Member: Chas. Muller; Corresponding Members: Fred'k A. Jackson, Thos. Mansell, Chas. K. Alley, J. N. Adam, and S. C. Nash.

Mr. BEACH—I have received a letter from Gen. Newton, in which he says he begs leave to acknowledge the courtesy which conveyed the vote of thanks of our society to him for permission to photograph the explosion at Hallett's Point.

The next subject of interest will be the Government apparatus as used at Flood Rock; and, in connection with that, I have quite an interesting letter from Gen. Abbott, who had charge of that part of the programme at the recent explosion, which I will read:

FORT AT WILLETT'S POINT,
WILLETT'S POINT, WHITESTONE P. O.,
QUEENS CO., N. Y., Oct. 3, 1885.

Mr. F. C. BEACH, *President Society of Amateur Photographers*, 361 Broadway.

DEAR SIR,—I shall be glad to co-operate in what you request, and to receive copies of your very interesting series of pictures.

Sergeant Von Sothen will no doubt be glad to explain our automatic method, which involves no mechanism other than an electrical fuse and battery. The first picture was thus taken by the same movement of the firing key that exploded the mine. I inserted a relay in the circuit to retard sufficiently to allow the effect to appear, and was entirely successful in this. Lieutenant Lusk took the next by an ordinary key, and Sergeant Von Sothen by the usual non-electrical plan. I am now having a plate photo-lithographed, which will explain the electrical connections, and shall be glad to send you a copy.

It may be interesting for you to know that the first (automatic) picture was designed to show if any of the groups failed to explode—a matter of no little engineering importance. The fine line of upheaval is continuous, thus leaving no doubt as to that point. The picture was taken at $\frac{1}{10}$ of a second after closing the key, and no tremor had reached us. The second was taken $\frac{1}{10}$ of a second later, and the ground was shaking, as the chronograph record showed.

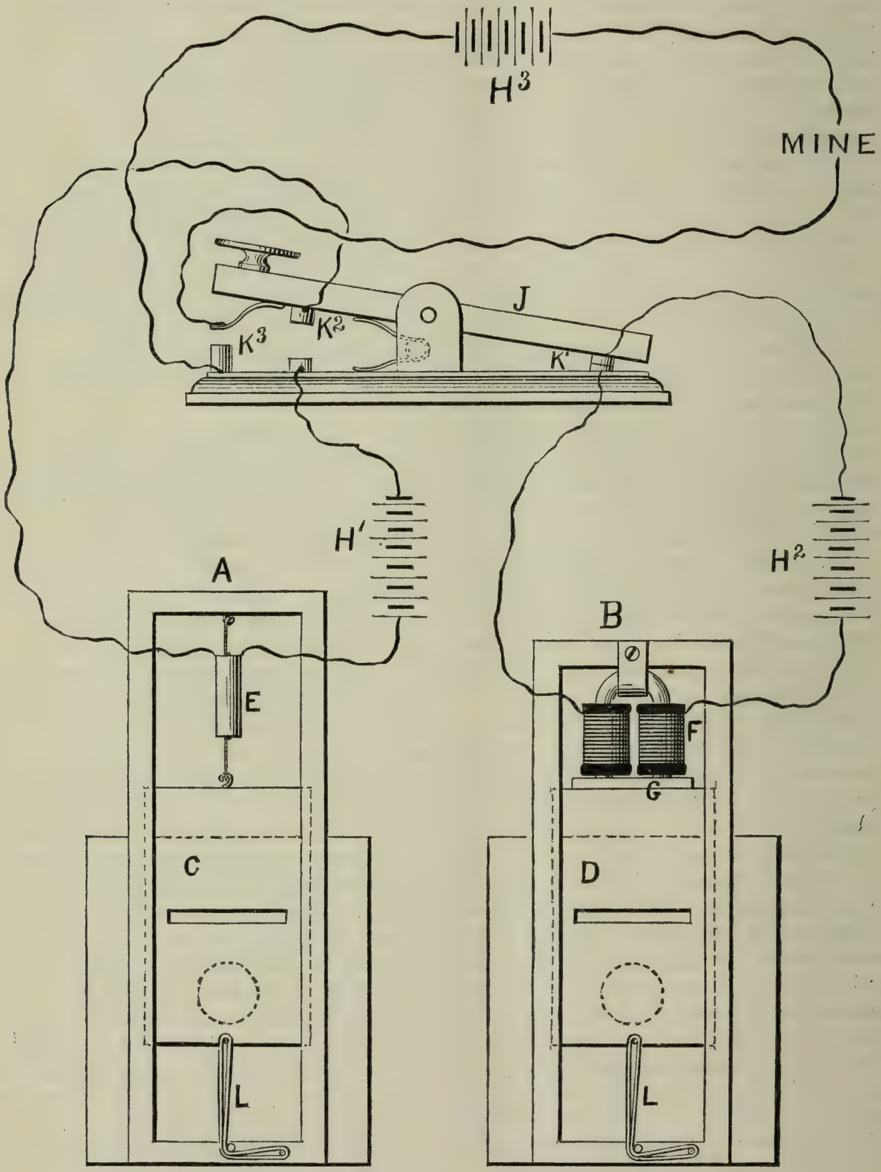
Yours respectfully,
HENRY L. ABBOTT,
Lieutenant-Colonel of Engineers,
Brevet Brigadier-General.

Mr. BEACH—I have the diagram here this evening which he speaks of, and we also have Sergeant Von Sothen, who has kindly brought the apparatus and set it up in actual working order, and he will explain it to you.

Sergt. VON SOTHEN—This is a very simple apparatus indeed. We employ two methods; one is by suspending the shutter from an electric fuse, and then, by making contact with a battery, we explode that fuse, and the shutter, which is simply supported by this thread connected with the fuse, will drop. It is simply a drop-shutter with a narrow horizontal slit in it, ¼ of an inch wide, and the drop itself is accelerated by an elastic spring, the whole being encased in a box to prevent all possible leakage of light.

Sergt. Von Sothen then explained that the elastic band attached to the bottom of the slide was held by a small knob at its lower end to the outer case, and by passing around a pin, different degrees of tension could be given to it. After showing this, he said: Now we are all ready, and suppose that the explosion takes place, and we take our picture. [A noise as loud as the explosion of a pistol was then produced as soon as the electric key was touched.] The shutter is down, you see. [A frame called a gallows-frame had been secured in an upright position to the table from which the fuse and shutter were suspended.] This is the way the shutter fell.

[Indicating, by raising and letting it drop with his finger.] Now, the second system is just the reverse. Instead of having an open circuit, which we close for the purpose of exposing, we have a closed circuit, which we open when we wish to make an exposure. The second shutter is, as I said before, arranged just like the first. In the top is an electro-magnet, and the slide itself has at its upper end a bar of soft iron. Now, if while the circuit is closed, and these two termini connected with the battery, the bar attached to the slide is held against the electro-magnet, and will remain there until the circuit is broken; the moment we break the circuit the magnet becomes demagnetized, and the slide will go down. That, in my opinion, is the most practical of the two methods. In order to ensure absolute certainty with this last method, I always use an elastic band to exert a slight pull on the slide; otherwise the bar of iron might stick by residual mag-



ELECTRIC DEVICES FOR AUTOMATICALLY RELEASING DROP SHUTTERS.

netism to the magnet after the circuit was broken.

Sergt. Von Sothen's remarks were received with applause.

Mr. Beach then handed around pictures made by the apparatus, and said: I would like to call your attention to the first picture, No. 1, of the explosion, which was made inside of one-tenth of a second after the electric key was touched. You will notice in the picture that the spur of the explosion toward New York shoots up higher than that toward Astoria.

[Mr. Beach then made a drawing on the blackboard to illustrate how the electric key operated.]

DESCRIPTION OF DIAGRAM.

In the above diagram the dotted circle represents the lens of the camera, in front of which is arranged a gallows frame, A, in which the shutter C slides; having, as shown, a horizontal slit or aperture ¼ of an inch in width. The shutter is suspended by a string from the lower end of an electric fuse, E, which latter is in turn hung from the top of the gallows frame. L is a light elastic band, bent around a pin attached to the lower end of the shutter, which exerts a slight downward pull. As soon as the circuit is closed by the key through point K^2 and battery H^1, through the fuse E, an explosion occurs, shattering the fuse and permitting the slide instantly to fall.

B represents a similar gallows frame arranged in front of a camera, having suspended from the top an electro-magnet, F^2. D is the shutter pulled down by the elastic band L, and provided with a horizontal slit same as shutter C. Secured to its upper end is a soft iron bar G, which acts as the armature of the magnet.

The closed circuit of electro-magnet F passes through battery H^2, platinum points K^1 of key J, back to magnet. The magnetism in electro-magnet F holds the shutter D in position. The moment the circuit is opened by pressing key J, thereby breaking the contact points at K^1, the shutter falls, making the exposure.

This method is found by experience to be more perfect and certain than when a fuse is employed. The function of the elastic band L is to overcome the residual magnetism in the armature G.

The third circuit, that leading to the mine, is shown as commencing from the platinum spring under the knob of key J to the mine, thence through the battery H^3, and back to platinum point K^3. The moment the spring comes in contact with point K^3 the explosion takes place. Supposing it is desired to automatically photograph the actual beginning of an explosion and its extreme height. The shutters are adjusted in position; pressure upon key J at once breaks the circuit of magnet F at K^1, and the shutter D falls. By the time its slit reaches the top of the lens tube, the spring under the knob of the key comes in contact with point K^3, causing the explosion. We thus obtain an instantaneous view of its first appearance.

The contact points K^2 being shorter than K^3, do not touch each other until the key is further depressed, and as the key is operated slowly, an appreciable limit of time occurs between the actual setting off of the explosion and the contact of K^2, which, in exploding the fuse E, permits the shutter C to fall, thereby obtaining the second view. Instead of working on an open circuit, K^2 can be arranged to press a spring opening a closed circuit through battery H^1, and a supposed electro-magnet hung from A. The key J and the arrangement of the shutters is the same as that employed in photographing the Flood Rock explosion.

Mr. BEACH—I believe the Dry Plate Committee have a report to make, and as it is some time since we have heard from them, we will be glad to hear the report.

The following report was then read by the Secretary and accepted.

REPORT OF THE DRY PLATE COMMITTEE.

Mr. President,—Your Committee would respectfully report as follows, on the subject of packing boxes for dry plates. Boxes sent by Mr. F. D. Buel, representing his proposed methods, have been submitted to the Committee for inspection and report, one of which opens by holding the box flat and removing the top, the plates being placed in pairs, back to back, and each pair separated from others at both ends by movable strips of corrugated manila paper, the whole wrapped in paper said to be free from hypo, and packed in the box. The other opens from the narrow side, the plates standing on edge, back to back, and separated from each other by strips of corrugated manila paper attached to each end of the box. After carefully examining both methods, and giving due weight to the advantages which each seems to possess, we have come to the conclusion that the one in which the corrugated paper is placed permanently at each end of the box is the best, for the following reasons:

First.—The plates can be removed with greater ease and rapidity than from the other box.

Second.—That after one or more are removed, the balance of the plates remain entirely separated and firm, even if the box is laid down flat.

Third.—If proper material is used for the corrugated strips, there can be no friction or scratching of the film in handling or in transportation.

Fourth.—It compels the makers to have the plates cut true and of nearly identical thickness, errors in either of these being manifest at the factory, and not when they come into the hands of the amateur.

Your Committee would also state that the following objections arise to this mode of packing in this particular specimen, but these objections can be easily obviated:

First.—The plates standing in these corrugated strips and resting upon the box unprotected by any substance free from hypo, are liable to be impregnated with it, especially should the box become damp.

Second.—The corrugated paper is liable to ruck up, and even tear, in packing or removing the plate and thus possibly injure the film.

To obviate these objections, the inside of the box, and especially when the plate is in contact, should be varnished or coated thinly with wax or paraffine; and that a very thin metallic plate, corrugated and placed in each end of the box, would be preferable to any paper that can be procured, and thus obviate the second objection.

As packing in this way will neither increase the size of or weight of the box materially, if at all, and has many advantages over the present mode, the use of separators, etc., we would, in conclusion, recommend that the society suggest to the plate makers that they adopt this method in packing their plates.

COMMITTEE ON DRY PLATES.

Mr. BEACH — Dr. Piffard, I believe, has brought one or two pictures of interest here, and also some photo-micrographs, and he will say a word about them.

Dr. Piffard then exhibited a series of photomicrographs made about ten years ago by Prof. J. W. S. Arnold, then of this city, but now residing in the South. The subjects were the scales of the *Podura plumbea* and the *Degeria domestica*, photographed under amplifications of from one to nine thousand diameters.

Dr. PIFFARD—In connection with these pictures, there is one interesting fact concerning which there was a great deal of discussion in the Microscopical Society some years ago, as to whether these markings on the scales were due to the actual presence of certain spines or projections, or whether they were due simply to a difference in the density and refracting power of certain portions of the scale. Upon that point they argued *pro* and *con* for a long time, and no definite decision was arrived at until some experiments were made by Professor Arnold in that connection. He took one of the scales and photographed the spine free from their other connections. That is all concerning those.

I have some four or five photographs here, which I selected from a couple of hundred made by Mr. Lockman, of Bethlehem, Penn., who has devoted himself largely to the photographing of plants, and I do not know of any one else who has given so much time to it as he has. I took these out as being samples of work that we don't see very much of. The next picture is one which I took myself at midnight last summer.

Mr. BEACH—How long was the exposure?

Dr. PIFFARD—Eighteen minutes.

Mr. BEACH—By moonlight?

Dr. PIFFARD — By moonlight and alone. (Laughter.)

Mr. BEACH—Dr. Laudy has some microscopic pictures or slides to exhibit. Before he does that, however, I think it would be in order for some one to make a motion of thanks to Sergeant Von Sothen for his very interesting explanation of the Flood Rock explosion.

Mr. BORMAN—I make that motion.

Dr. PIFFARD—I second it.

Motion carried unanimously.

Dr. LAUDY—When I received the notice on Friday, that Dr. Piffard was to exhibit to the society some of the work done, particularly by Surgeon-General Woodward, of the United States Army, there seemed to be a coincidence in it, for that very day I had received from Dr. Billings fifteen of the original negatives, prepared by Gen. Woodward himself. Not feeling privileged to bring those negatives here myself, I asked the privilege of simply making positives from them; therefore I am not able to present the negatives themselves this evening, but I managed, through the day, to make fifteen slides, nine of which

I have brought here for your investigation to-night.

They are those well-known ones of the blood disks, and some peculiar test lines and test plates. The diameters are marked upon them, and the magnifying power speaks for itself. I will pass them around so that the members may have an opportunity of viewing them. I had a double purpose in making these. One was to make them to present them here this evening, and the other was to help make up an exhibit, which I hope to make, as a competitor in lantern slides.

The remark that Dr. Piffard made, that I had assisted Professor Arnold in his work, is true. I did that very thing, and I feel sorry to think that Professor Arnold was incapacitated, and consequently compelled to give up this beautiful field of investigation, because I believe with Dr. Piffard, that General Woodward and Professor Arnold were pre-eminently successful in this particular branch.

The *President* then read the following letter:

North River Savings Bank,
Eighth Ave., cor. 34th St.,
New York, Nov. 10, 1885.

F. C. Beach, Esq.,
President Society of Amateur Photographers of New York.

Dear Sir,—With this letter you will find a burnisher and one of Mr. Benjamin's magnesium lamps, which was made expressly to order for me.

Feeling that the society could make good use of them, I ask that you accept them as a gift from me.

With great respect, Henry V. Parsell.

A vote of thanks was then tendered to Mr. Parsell.

Mr. Beach—I would ask Dr. Janeway to take the chair, as I have a few remarks to make on an improvement in the roller holder, and I had another apparatus here to show you, but I will defer that to a later date.

Dr. Janeway then took the chair.

Mr. Beach then exhibited the Parsell camera shown at a previous meeting, somewhat improved, having had a small door cut transversely in the top of the main lid, which is opened every time the key is to be inserted for winding up an exposed sheet with the Eastman roller holder. A sliding rod had been inserted at the lower left-hand corner of the box, its outer end being formed to represent a knob, with the other knobs on the corner of the box; it was designed for resetting the shutter each time an exposure was made. A longer key was arranged to fit into the holder. With these changes it was an easy matter to make successive exposures one after the other, without inserting the slide each time.

Explaining about this, he said: Now, we will suppose that the paper is set to start, and we will have the camera focused, say, for twenty-five feet, to take in all objects from there and beyond very plain. We put the holder in the camera, set the shutter by pulling out the sliding rod and pushing in same. Now the shutter is set, and it is desired to take a picture. We will draw the slide in this way [illustrating]. Now we go off for a morning and take a half a dozen pictures, and you won't have to put the slide back at all. All you have to do is simply to throw the pivoted diamond-shaped cap on one side and press the trigger, which, by releasing the shutter, makes the exposure.

Now the question is, how do you change the paper without putting back your slide? You simply put the diamond-shaped cap back over the lens, and then draw out the sliding rod, resetting the shutter; then you open the little door in the top, insert the key in the holder, wind it up, and a little wheel at the other end with a mark on it tells you when you have wound up the exposed film; then you pull out the key and shut the door and you are ready for the next exposure, and so you can go on continuously, one picture after the other, very rapidly.

The objection before was that you could not set the shutter or wind up the paper without opening the large lid of the box, but with these little changes it works much more easily and satisfactorily, and you can effect a change very quickly, as you can see.

I thought perhaps there might be a few of you who are a little anxious to know something about the development of plates, and so I have taken the pains to write a little paper, which, with your permission, I will read.

Mr. Beach then read his paper on "The Appearance of the Image During Development." [See last Bulletin.]

The *Chairman* (*pro tem.*)—You have heard the admirable paper of our president. I would like to have some remarks from some of the members, either concurring or not concurring with him.

Mr. Roosevelt at this point stated that Mr. Beach, in the paper just read, had not said anything about over-exposure or under-exposure.

Mr. BEACH—The gentleman remarks that I have not mentioned anything about over-exposure or under-exposure. My idea was, and I wanted to convey the impression, that the appearance I have described was of a plate when it was properly exposed. When the plate is under-exposed, the shadows invariably stick or they fail to come out, and the only way that that can be overcome, in any degree, is to add a little more alkali. In using the potash developer, I have found that you could use as much as two drams of potash solution to two ounces of water—perhaps three drams with safety.

Perhaps one of the latest improvements in the development of instantaneous plates is to use a very weak or comparatively weak solution, and to leave the plates in it for a couple of hours, or until the picture all comes out clearly. I have been shown instantaneous pictures developed in that way, where the development took place in two to two and a half hours. If a plate is inclined to frill there is no hope for it. (Laughter.)

Now, in regard to over-exposure, my remarks apply equally as well. If you experience any difficulty in that regard, the remedy is to add a drop or two drops of bromide of ammonium or potassium to the alkali solution, and when you have succeeded in getting it perfectly under your control the plate will keep clear, and you will gain density as you go along. It is also a good plan to weaken the developer with water, and if you find, after the plate is developed, that you have not got sufficient density, you have got to put it in the pyro solution and let it remain in the pyro solution, and take it out occasionally to find that it is of the proper density. That is, to me, quite a satisfaction. This is prior to being put in the hypo, of course.

The gentleman asked me about the effect of over-development. It thickens up the shadows of the picture and makes them too black, and it is also due to having too strong an alkali in the development.

Mr. FICKEN—I should like to say something in regard to developing instantaneous pictures, which is applicable to the subject under consideration. My experience is that after the details are all out, the plate refuses to get more dense.

Mr. BEACH — That is regulated by the amount of pyro used in your developer. If you are sure you have not enough density before you fix the plates, simply put it in a strong pyro solution for three-quarters of an hour or half an hour, and it will intensify very gradually.

Mr. WILSON—I would like to know what chemical and mechanical action takes place during the development.

Mr. BEACH—I have not investigated the theory of that so as to enable me to answer you fully, but the general theory is that the combination of the pyro and the alkali reduces the exposed film—the bromide film.

Mr. FICKEN—The gentleman will find that very fully covered by Captain Abney in his book on emulsions.

Mr. ROOSEVELT—I had an experience last summer that differs from anything that we have heard about here, and it possibly can be explained by some gentleman present who is acquainted with the laws of chemistry. I kept quite a number of small plates in my yacht, in plate holders, ready to be used, and I suppose they were slightly affected by the salt water. When I did use them, I took them into my room to develop them. Although they were all instantaneous pictures, they flashed out—immediately appeared and disappeared. I weakened the developer as much as I could, but it made no difference, and there was no picture that I produced from those plates that did not come and go instantaneously. But I kept on with the process, and when they were fixed they seemed very clear and distinct, and every detail was brought out; but when I came to print from them, they required an hour's exposure in broad sunlight, and were practically worthless. Now, whether the salt air produced that result, I cannot say. I think this was the case with all the plates. I had there just a dozen. I used up six of them, but with the same result, and so I put the others away. I don't know whether the salt air might have affected the plate, and that is a matter that I wish to call our President's attention to.

Mr. BEACH—How long had the plates been exposed to the salt air before being used?

Mr. ROOSEVELT — I had them there a month.

Mr. BEACH—My experience leads me to believe that salt air has no injurious effect upon plates, for the reason that I know that gelatine plates are imported from abroad, and I have seen gelatine films that have been on the ocean ten days, at least, and when taken hold of with the hand, were extremely damp, but still they would produce excellent pictures; so the difficulty which you experienced could not be attributed to the salt air. The probable effect is that they were over-exposed —you had a very bright light, and probably you used too strong a developer.

Mr. FICKEN—I could say, *apropos* of that —if any members have been nervous about their plates getting damp—that I left by mistake two or three plates in my boat-house on the Shrewsbury River, at Seabright, New Jersey, during an entire winter—it was an ordinarily built boat-house — and the next summer I exposed the plates, and got as good pictures from them as any plates that I ever used in my life.

Mr. BEACH—I would like to call the attention of members to the two photographs that were shown here a little while ago by Dr. Piffard. The peculiarity in them was that they had two ghosts in them, and seeing those pictures and being questioned as to how they were produced, reminded me of an experience that another amateur friend of mine had in a similar line, so that the way they were made flashed into my mind at once. It appears that Dr. Piffard went off on this trip, I suppose for pleasure, and omitted to do what I advised you all to do the other night, and that was to examine your camera very carefully and see whether there are any leaks of light that come in. Now this "ghost" peculiarity is solely due to a miniature pin-hole, as it were, in the front part of the camera, which *might* have been in the screw-hole that screws the flange of the lens on to the board. In that case, being so small, it makes a perfect image on the ground glass, which the eye could not see, perhaps, unless you have very keen eyesight.

Dr. PIFFARD—The screw-hole where the screw fitted in is not *right* in front. It was quite a good-sized hole. The remarkable feature to me in connection with the matter, and one that I do not fully understand, is the intense whiteness.

Mr. BEACH—That is because more light came through there than through the lens.

Dr. PIFFARD—But the hole through the lens is much larger. The diaphragm was larger than that.

Mr. BEACH—The light was obstructed in one case, and in the other it had a direct shoot right through on to the plate. I have seen pictures more *sharp* than that. Of course the holes were very small, but as this one was large that is the reason the ghost is so blurred.

Dr. ALLEN—I once got a double picture, which was a mere reflection from the surface of the lens. I was taking a rapid picture of the eclipse of the sun last spring. I took two or three pictures, and all the pictures that I took came out with a double image, one slightly fainter than the other, and the only explanation I could get of it was that it was a reflection from the surface of the lens itself. It would be thrown on the gelatine plate, and, the light being intense, would be reflected from that to the lens and reflected back to the plate itself. I would like to hear some explanation of that. I got two images, one below the other.

Mr. BEACH—Did you examine the camera before you took the picture?

Dr. ALLEN—Yes.

Mr. WILSON—Double images of the sun and moon can be seen by looking into a piece of plate-glass. If you look at the image reflected by a piece of plate-glass and the moon is at your back, you will see two images, one from each surface, and by changing your position they will move away from each other, according to the angle at which you view them. I remember last summer being on the piazza of a friend's house when the upper sash was drawn down, and we could see four images of the moon reflected in the two panes, one behind the other. I remember once holding a wet plate in my hand and seeing an image of the sun reflected in the plate, and that there were two images to be seen there. One was much redder than the other, and one was the reflection from the surface that carried the film and the other from the opposite surface of the glass being reflected back through the film and being colored by it, and it is possible that this gentleman's images may have been produced by the reflection of the plain side of the glass throwing the reflection back on the film.

Dr. ALLEN—The images were too far apart for that, and, besides, the main picture was taken in the center of the plate where the angle would be a right angle, and one image in that case would be directly on the other. They were perfectly at right angles, and the images that I saw were perhaps an inch and a half apart. One was slightly fainter than the other, and there was no fogging.

The *Chairman* (*pro tem.*)—The same law governs this that governs in regard to rainbows. You have reflection and refraction combined.

Dr. ALLEN—This was made with a Dunlap stop.

The *Chairman* (*pro tem.*)—You would have your supplementary figure, as you state, and further away; if the stop was larger it would be closer to you.

Mr. CANFIELD—Mr. Chairman, I would like to raise a question as to how long it is desirable to use a fixing bath used in fixing plates in negative making. My attention was called to this the other day, by asking a gentleman who has just begun making negatives, and he stated to me that it was his practice to make up a fresh hypo bath every time he took pictures, and I told him that it was my practice to use hypo in a dipping bath, and keep it until it was pretty well stained, and the question was raised whether that was a safe proceeding from the point of view of turning out good work, and I now raise the question: How long is it desirable to use the same hypo bath in fixing negatives?

Mr. ALLEN—The hypo bath becomes weaker the longer it is used.

Mr. BEACH—I prefer to use a fresh bath—well, not more than a week or ten days old—and I think that that is the conclusion they came to at the Convention at Buffalo this year. That subject was brought up, and it was stated that by reason of the decomposition of the sulphur in the hypo while the plate fixed out apparently perfectly clear, yet afterwards, or after the plate had been standing for a long time—for a year or so—it would change from a clear color to a yellow color, which could not be eradicated, and it was advised there, and the general sentiment was, that a fresh hypo bath should be used very frequently if you want to obtain good results.

In reply to a question how long the plate should be left in the hypo, Mr. Beach said: If the plate is well developed, and all the details brought out, there appears to be no danger in leaving the plate in the hypo bath more than half an hour, or somewhere along there. It is well to have the plate in the hypo bath quite a while, to be sure that it is fixed, because it often happens when you take the plate out it looks clear in the red light—for in that light you cannot discern the yellow color—and after the plate is washed and dried, to your surprise, you will see a yellow tinge on one portion of the picture, and that is invariably due to taking it out of the hypo too soon. I always use a hypo solution of one to six, and I prefer to mix it up fresh.

Mr. ROOSEVELT—I used a saturated solution as recommended to me by a professional photographer. I kept about what would go in a bottle, and if it did not work well would throw in crude hypo, either into the bottle or the tray. Then I tried one to four and one to eight, and I can't see that it makes any difference one way or the other, except that the weaker is slower, but I was afraid (till the president removed the doubt from my mind) that occasionally I weakened the image by getting the bath too strong. I am satisfied, from what he says, that the image will be affected by the hypo bath under certain contingencies; but what I would like to know is whether there was any danger in getting that bath too strong.

(*To be continued.*)

WEDDING BELLS.

BONANNO—SARONY.

THE DAUGHTER OF THE PHOTOGRAPHER MARRIED BY THE MAYOR AT THE CITY HALL.

AN interesting wedding took place last week in Mayor Grace's private office. The bride was Miss Isabella Louise Sarony, daughter of the well-known artist, of No. 37 Union square, and the bridegroom Joseph Bonanno, a civil engineer and a native of Rome. Mr. Sarony accompanied the couple, and also a young lady who declined to give her name. Miss Sarony was fashionably dressed. She is but eighteen years old; Mr. Bonanno is twenty eight. The necessary papers having been made out, Mayor Grace read the service. In the middle of it he stopped and asked the bridegroom if he had a ring. He did not have one, and the Mayor remarked: "You don't need it here, anyway." Then he finished the service and wished the couple much happiness. Mr. Sarony said that the couple were Catholics, and that a civil marriage was deemed necessary. The religious ceremony was performed at Mr. Sarony's house in the evening by Father McDowall, of the Church of St. Agnes.—*New York World.*

Bibliography.

LA PHOTOGRAPHIE APPLIQUEE A L'ARCHEOLOGIE. Per Eugene Trutat. Paris. Gauthier-Villars.

This is an excellent production from the well-known house of Gauthier-Villars, who have done so much for the publication of photographic books in handsome style. It treats of the photography of monuments, works of art, furniture, inscriptions, manuscripts, etc. The volume is a small octavo of 130 pages, containing a number of woodcuts showing the disposition of apparatus for obtaining photographs of the various subjects discussed, and also contains fine reproductions of works of art and inscriptions as examples of this application of photography.

PROCÉDÉ AU GELATINO-BROMURE. Par M. Geymet. Paris: Gauthier-Villars.

Is a small octavo of forty pages, giving short accounts of the methods of preparing emulsions and using dry plates. The descriptions are clear and readily understood, and the little volume is useful for beginners; but we doubt if it is as good as the same class of publications in the English language.

TRAITÉ PRATIQUE DE PHOTOLITHOGRAPHIE ET DE PHOTOTYPIE. Par M. Geymet. Paris: Gauthier-Villars.

We have here another excellent example of book-making on applied photography. In a space of about 170 pages octavo, the subject of photo-lithography is treated in clear and concise language, and a number of its technicalities explained. Beginning with the lithographic stones of various kinds, the methods of transfer are described, and the various other steps until the finished picture is produced. Under the section of phototypie, the processes of obtaining pictures from a gelatine base are described in detail. The only drawback to the volume is the lack of cuts.

THE MODERN PRACTICE OF RETOUCHING. By M. Piquepé. New York: Scovill Co.

This little volume treats of the practice of retouching as practiced in France, and also of the English method, which is used in the United States. The subjects discussed are the materials used, surfaces, how to retouch copies, positives, enlargements, landscapes, and the English method. These descriptions are short and in most cases clear; but the entire absence of illustrations of any kind detracts immensely from the value of this otherwise well-issued volume. To attempt to teach anything about retouching in a book without illustrations, is about as wise as teaching drawing by verbal descriptions.

ELEMENTARY TREATISE ON PHOTOGRAPHIC CHEMISTRY. By Arnold Spiller. New York: E. & H. T. Anthony & Co.

The demand for this handy little volume has called forth a second edition from the house of our publishers. This work contains all that is needed in the way of chemical knowledge for the beginner in photography, and the large sales of the former edition speak more than any words of ours for its usefulness.

What Our Friends Would Like to Know.

N. B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—T. H. T. asks:—Which is the correct material to use as a destroyer of hyposulphite, chloride of calcium or chloride of lime, and what is the difference? A friend of mine says that they are different names for the same thing, and a druggist here says he is right; yet I don't think so, and I am not chemist enough to prove what I say. Please help me out.

A.—Chloride of calcium and chloride of lime are two totally different substances. Chloride of calcium can be made by dissolving marble in muriatic acid, while chloride of lime is made by passing chlorine gas over moist slaked lime. The material obtained by this last process contains some chloride of calcium; but the active constituent in it is chloride of lime, which is called calcium hypochlorite by chemists. This is the material to use as a remedy against hypo.

Q.—H. G. C. writes:—I have some photographic diagrams, 6 x 12 inches, which I wish to paste on tin, but I don't want them to expand or swell by wetting. I want them to be exactly the size of the negative, or of the paper just printed from the negative. Can you tell me how I can accomplish this?

I want to use plain paper if I can. I would not want the least bit of expansion.

A.—We do not know of any method by which you can paste paper upon tin-plate without some expansion upon applying the paste and a slight contraction upon drying. A solution of gelatine in weak alcohol works with very little contraction, and is the best thing we remember to have used.

Q.—W. F. writes:—Would you kindly inform me through the BULLETIN if a Dallmeyer Wide-angle Rectilinear Lens, 3¼-inch focus, would be suitable for a detective camera, 3¼ x 4¼, for instantaneous work, and if not, what kind of lens would you recommend?

A.—The above lens could not be used in a detective camera. The lens of moderate angle, and either Dallmeyer or the E. A. Rapid are best suited to these cameras. In any case, the adjustments on the cameras are so close that the lenses have to be specially fitted to them.

Q.—S. C. B. writes:—I recently was called to make a panoramic view of the Sanitarium. It is about 300 feet long and five stories high. I placed my camera opposite the center of the front, leveling it perfectly, and after making exposure of south half, I turned my box on the stand and made the other, taking care that I did not disturb the stand. The ground is a little descending. My views are fine and print exactly alike, but they do not come together properly. Can you tell me why?

My plates are 10 x 12, and my lens an 8 x 10 Dallmeyer Rectilinear. I now think I should have placed my camera opposite the center of each half. Would that be right?

Recently, in printing with a sixty-grain solution, my albumen softened so much that the gloss was entirely destroyed. In silver bath three minutes; neutral solution. Can you tell me why?

A.—Your views should fit if they each contain exactly half the building. If you will send us a print from each of the negatives, we can help you more intelligently. Perhaps you could do better by using a wide-angle lens and taking the whole building on one plate. Send us prints.

Views Caught with the Drop Shutter.

Mr. E. MALLINCKRODT, of St. Louis, was recently very seriously injured by being thrown from his horse while riding. We are glad to hear he is in a fair way of recovery.

SINGHI, The Fotografer, formerly of Binghamton, N. Y., is now making faces at Bridgeport, Conn. There is no doubt he will maintain his reputation for good and not cheap work.

W. G. CRAMER, the well known dry plate maker, of St. Louis, has been so pressed to supply the users of his plates that he has been compelled to enlarge his factory, and is now preparing to increase his facilities for work to about double their former size. He asks his friends to have patience with him while these improvements are progressing.

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Advertisements should reach us not later than the Monday preceding the issue for which they are intended, otherwise we cannot promise to publish them in the succeeding number. It is also necessary to notify us of any alteration before the date above mentioned, and to state for what period the advertisement should be continued—whether for one, two, six, twelve or twenty-four issues.

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Prof. CHARLES F. CHANDLER, Ph.D., LL.D., *Editor.*
ARTHUR H. ELLIOTT, Ph.D., F.C.S., *Associate Editor.*

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Vol. XVI. SATURDAY, DECEMBER 26, 1885. No. 24.

THE BULLETIN FOR 1886.

That the Bulletin has proved a success during the past year, our long list of unsolicited testimonials bears ample witness. And we have found it utterly impossible to publish all the good things that have been said of us, owing to the wealth of material always at hand to fill our pages. What is yet more encouraging to us is the large increase in our subscription lists, on which the number of names is now almost double what it was one year ago, and is increasing with every issue of the journal. We recall with pride the names of some of the contributors to our pages: Prof. C. F. Chandler, Ph. D., Prof. Ogden N. Rood, Dr. A. H. Elliott, Ph. D., Prof. J. M. Eder, Ph. D., Henry J. Newton, E. L. Wilson, Ph. D., L. H. Laudy, Ph. D., Victor Schumann, Prof. Chas. F. Himes, Thos. Bolas, F. C. S., M. Carey Lea, Dr. R. W. Wilcox, F. C. Beach, Dr. John H. Janeway, Prof. Spencer Newbury, A. A. Campbell Swinton, Fred. E. Ives, T. C. Roche, E. K. Hough, G. H. Loomis, J. B. Gardner, W. E. Partridge, P. C. Duchochois, J. F. Ryder, David Cooper, Abraham Bogardus, and a host of others. In addition to the contributions from the above gentlemen, we have given our readers clear and accurate reports of the photographic societies, in many cases from the stenographic notes of our own reporters. Our correspondence column has been a source of pleasure to our editors, and has become an important and unrivaled feature of our publication.

This is what we have done and shall continue to do, with this advantage, that the fund of material upon which we can draw in the future is still larger than that utilized in the past. Among other improvements we intend to illustrate every number of the Bulletin with a specimen of the best work in both professional and amateur photography. Thus the subscribers will obtain in one year two dozen gems of the photographic art. Various improvements in the literary part of the journal will also be made. In fact nothing will be left undone to keep it in the front rank of American photographic journals.

The improvements we contemplate will involve a large expenditure of money, and as we cannot be expected to furnish so much valuable material at a loss, we shall be compelled to charge three dollars for the illustrated edition of the Bulletin, and two dollars without the illustrations. Just think of it! Twenty-four illustrations and seven hundred and sixty-eight pages of valuable photographic information for three dollars. There is not another photographic journal in America that does so much for so little. Either the illustrations alone or the literary material alone are worth the price of the subscription, and we give them both, so the subscriber gets twice the worth of his money.

We have laid out a large amount of work for the coming year, and we intend to carry it through. But to do this with energy and pleasure, we must have the encouragement of our readers and subscribers. Help us, and we will help you as much as, if not more, than in the past. Our policy will always be, *With charity for all and malice towards none.* THE PUBLISHERS.

EDITORIAL NOTES.

WE are glad to announce that a series of articles upon "The Magic Lantern and its Applications," from the pen of L. H. Laudy, Ph.D., will appear in the BULLETIN of next year. We are fortunate in being able to obtain these papers from Dr. Laudy, who is, perhaps, without a rival in the use and application of optical apparatus for projection. Our readers will find these papers full of practical knowledge, the result of years of experience in the use of the lantern in Columbia College.

OUR readers must not forget the exhibition of photographs by the Photographic Society of Philadelphia, in the Academy of Fine Arts in that city. The exhibition of photographic prints will be from January 11th to 16th. The lantern slides will be exhibited on the evening of the 14th. This promises to be one of the best exhibitions yet attempted in America, and we wish it every success.

WE have before us the report of receipts and disbursements of the Secretary of the Photographers' Association of America. Mr. H. McMichael gives a detailed statement of the money that has passed through his hands, and in a future number of the BULLETIN we shall publish the statement in full.

WE call special attention to the announcement of our publishers on the first page. During the past year they have done everything in their power to make the BULLETIN a success, and we are pleased to note the satisfactory condition of the subscription list. Help us in the future and you will not regret it. If you think well of the BULLETIN recommend it to your friends.

THE PHOTOGRAPHIC EXHIBIT AT THE AMERICAN INSTITUTE.

ONE of the first things that strikes an occasional visitor to the great exhibition of the American Institute, is the meager space usually set apart for art and art work.

We have been so disgusted at this in former years, that we had begun to believe that the artistic element in the Board of Managers had become so cold and inanimate as to be practically without existence, at least as far as the results shown at the exhibitions were concerned. This year there were seen many and encouraging signs of returning life in this department; and this is especially true of the photographic department. This section used to be stuffed away upstairs and in the vestibule, and was horribly lighted. In fact it appeared to us that it must have required a great deal of courage for a photographer to send any pictures there. The display of photographs this year was downstairs, was well arranged, and generally well lighted. We are sure that all interested in photography will thank the managers for this decided step in the right direction. The next step will be in the direction of more exhibitors.

The exhibition of photographs this year was unusually good, and highly interesting. The character of the pictures was first-class, and the displays of the various exhibitors large and well arranged.

Pach Brothers occupied a large space with their well known work. In the way of groups these gentlemen are unrivaled. The college groups of Columbia, Harvard, Princeton, Yale, and other schools, are pieces of photographic art that they delight to exhibit and are justly proud of. An interesting set of pictures were a number of plates of scenes in Kiralfy's "Seven Ravens" taken at Niblo's Theatre by the electric light. For this kind of work these were the best pictures we have seen. An artistic portrait of a lady with a cat-tail rush in her hand, was a piece of good work in half-length portraiture.

A number of life-size crayon enlargements were also very good. Two views of the yachts Genesta and Puritan upon the dry docks gave interesting pictures of the hulls of these vessels, and were clean, sharp photographic work. A 4 x 4 head of a gentleman with white hair was an exquisite piece of lighting and posing. Groups of Gen. Grant and his children and grandchildren, in various years from 1870 to 1884, were quite interesting pictures. While in landscape work we have views at West Point and vicinity; the scene looking north from the battery being one of the best we have seen.

Wilhelm had a large exhibit of life-size enlargements of good photographic quality. The groups of children were particularly good, and the expressions caught were singularly pleasing. Sometimes the tones were a little flat, but not readily noticed. A crayon of a little girl with an upward glance in her eyes was very fine, and beautifully soft in its finish.

Fredericks showed a number of pastel portraits and large crayons. The lady with a Spanish lace veil was quite artistic, and a very effective portrait. The portraits generally were very good; sharp, clear, and free from confusing shadows in the backgrounds, while the tones were excellent. Two medallions of ladies were very fine. As the subjects were evidently both pretty, they probably inspired the artist.

De Yungs had a good exhibit of portraits in oil and crayons done with an air brush. The crayons were very good, but the oil portraits were not as good as we should wish them to be.

Gutekunst, of Philadelphia, sent four large frames. Some of these were male heads in large panels and medallions, while others were ladies and children in large medallions, panels and 11 x 14 size. This whole exhibit was first-class in every respect. The posing was artistic, the light finely managed, and the finish of the pictures was of the highest excellence.

Gutekunst also sent a number of examples of phototype printing. This set of pictures, from photo-mechanical printing, was perfectly beautiful, and certainly the best specimens of this kind of work we have seen in New York.

C. H. Heimburg showed a number of crayons and colored enlargements. Some of these were very good, particularly a gray head with white flowing beard, and also a lady with a lace jabeau; in both cases the lighting and posing were quite artistic. The colored pictures were rather too striking in contrast of color to just please us.

Rockwood's exhibit was especially interesting for the fine examples of pictures made from paper negatives.

Among these were some fine heads, notably those of Henry W. Beecher and Robert Bonnar. Some church interiors (24 x 36 and 24 x 30) by the same method were the finest pieces of work of this description we have seen. The perfect freedom from halation in the windows was truly remarkable. Mr. Rockwood also showed a number of architectural pictures, among which we noted a fine view of the Academy of Design, and some characteristic scenes on the elevated railroads. In landscapes the views upon the Hudson River in the Highlands were very fine. The dock at Roa Hook, the landing-place for the New York State Camp, and a view of the Highlands from a spot near Stony Point, were gems of this class of work. In the cabinet pictures, of which there was a very large exhibit, some of the best work in the exhibition was to be seen. The artist had evidently studied each subject, and the variety of pose was wonderful, being an immense relief from the stereotyped methods usually followed in small portraits. It was very hard to find fault with any one of the numerous cabinet portraits of this exhibit, so well were the best points of each face brought out. We think that Mr. Rockwood shows a very decided advance in the artistic work of his pictures. He has certainly studied his subjects with advantage, and applied his studies with unusual skill.

A number of fine examples of solar printing by Rockwood were exhibited; but they call for no further remark than that they were very well done and effective.

Howe showed some of the finest photographs of interiors we have seen. These were upon 11 x 14 plates, and must be seen to be appreciated. The exquisite detail in these pictures was marvelous, and the more we looked at them the more fascinating the sight became. While these pictures were the *piece de resistance* in this exhibit, yet the landscape pictures were very beautiful. These latter embraced views of the New York State Camp and its vicinity. Two of these views were particularly striking: one, a long view of the State Camp and the Highlands taken from the hills of Peekskill; the other, a view of the Camp and Peekskill Bay, looking west. Both these were gems of long-distance landscape photography.

Parkinson evidently likes to take life-size pictures. All the large heads in his exhibit were direct life-size portraits, and were wonderfully effective. In 1884 he received the highest award in fine arts given by the Institute, which was a Medal of Taste, and he certainly deserved it. A study of a boy selling newspapers was a fine bit of artistic work, and thoroughly well executed in every way. A number of views around the home of Henry W. Beecher were interesting and beauifully done. The steamer dock at Peekskill, Mr. Beecher's barn-yard and the view from Beecher's house with the Hudson River in the distance, were uncommonly fine. Mr. Parkinson is well abreast of the finest work of the day in photography.

Altogether the exhibit at the American Institute was very good; and we hope that in future we shall be able to chronicle an advance upon the already fine achievements of the present exhibitors, and see yet others enter the field with a spirit of emulation that is the true stimulant of all art work.

◆

A MONTEZUMA lady said to her young hopeful: "Johnnie, why don't you rock the baby? You'd let it squeal its life out." "I would if I could." "Why, Johnnie! Want your little brother to die?" "Well, wouldn't it be a good deal better fur him to be up in heaven, flyin' around, than to be layin' a squealin' in that 'ere cradle?"—*Montezuma* (*Ga.*) *Record*.

MEDALS AWARDED FOR PHOTOGRAPHIC WORK AT THE AMERICAN INSTITUTE FAIR.

C. D. Fredricks, Broadway and Ninth street, photographs; Medal of Superiority.

George G. Rockwood, 17 Union square, photographs; Medal of Superiority.

Frederick Gutekunst, 712 Arch street, Philadelphia, Pa., phototypes, photographs in printer's ink, and photographs, silver prints; Medal of Superiority.

Morris B. Parkinson, 29 West Twenty-sixth street, photographs and pastel; Medal of Superiority,

Frederick L. Howe, 58 West Twenty-third street, photographs; Medal of Superiority.

Pach Bros., 841 Broadway, photographs; Medal of Excellence.

Rudolph Wilhelm, 1000 Third Avenue, photographs and crayon portraits; Medal of Merit.

C. H. Heimburg, 555 Third avenue, plain and colored photographs and free-hand portraits; Medal of Merit.

Magnus Greiner, 503 East Eighty-second street, free-hand crayons; Medal of Merit.

David Ehrlich, 200 East Sixty-first street, colored photographs, pastel paintings, portraits in India ink and water-colors, and free-hand crayon portraits; Medal of Merit.

Scovill Mfg. Co., 423 Broome street, photographic cameras and apparatus; Medal of Superiority.

Our publishers had a large and handsome exhibit of their fine apparatus; but as they had taken medals in former years, the collection was not entered for competition.

◆

All communications for the columns of the Bulletin *should reach us on Monday preceding the date of issue, to insure their publication at that time.*

THE VAGARIES OF DRY PLATES.

BY THOMAS PRAY, JR.—*ex-amateur.*

Non-professional workers of the puzzling compound of ignorance and experiment called a dry plate, are sometimes very much astonished at results, and more so at the makers' ideas of the "perfection" of "their plates," and the ignorance of the quondary "worker of dry plates." We confess to a set back of the grandest dimensions in connection with our article published in the Bulletin of November 28th, pp. 678–9.

The stock dealers from whom the plates were bought assured us that "the * * * plates took the most prizes," and the maker writes in effect "that the number of emulsion is O. K. and "too strong hypo must be the cause of the markings." What a pack of fools *we* must be if the maker is correct; and in that case the Stanley, Cramer, and St. Louis dry plates must, *per se*, be no good—for the four makes of plates, three of which are named, and one unnamed, were all put into the same bath of hypo, and only the one lot of plates referred to in the previous article could get up the frost-work markings or blotches; but the Stanley and Cramer's came out first-rate, while the second evening's "entertainment" included three plates exposed for the purpose of development and fixation in the same baths, from a fresh dozen of Ripley's, and they, too, showed a clean film, well developed, clear, and very crisp. Here we have four different lots and makes of plates all working correctly, and one lot coming out BAD.

Within the last week a box of 5 x 8, of one of the emulsions referred to previously, was discovered on the shelves of a stock dealer, and purchased. Two different operators have produced the same effects as those first described. "Strong hypo" has a curious power, and we will in future avoid that kind of "curdled milk" or "poor gelatine" which spoils good glass and the worker's disposition.

LONG EXPOSURES ON QUICK PLATES.

Too many of the "plate busters" are now running to the "snap-shutter craze" for all sorts of work, and seem to have the idea that the quicker the plate, the more delicate the gradations. My experience has been that the image on a fast plate lacked in contrast as well as brilliance of the image. When it was compared with a slower one—referring especially to landscapes, architecture, etc., the quicker the plate, more flatness and a softer image in a general sense. Now, if this be so, and the best authorities say so, then the plate best adapted to such work as still objects, will, with proper exposure, give by far the best negative and print, while the rapid plate, in case of moving objects, *must* be used; and here is exactly where the skill comes into use. I recently heard both the Stanley and Ripley plates condemned for snap-shutter work by one of the plate busters. He was invited to make some exposures, and come around to my den and show how he developed them, and give me a chance of developing after he had finished. He made exactly the same mistake so many others do. He used the dirtiest developer of the lot, pyro-potash; and he did bust two of the plates, and "such ghosts." The developer was made up as per formula, and put on, bromide being first added. The image came up, and, like the darkey's coon, "it staid dar." Then he went through the hypo. "There is what I call a poor plate." "Oh, well, just hold on a bit; let's see." Our developer was made up from Newton's, in two lots, one normal, and reduced twice with water. Then another lot, double pyro and single alkali; and the Ripley and Stanley plates flowed with the first lot of developer, which had been "strengthened with two volumes of water." The image was not in as much of a hurry as our friend, who had not been told why two lots of developer was used. Finally the lights began to come out, and, when the detail was pretty well out, the water developer was poured off and a part of the other poured on; and a few drops of bromide of soda, 15 grs. per ounce, added. The image was in this way built up, and when it had fully developed the plates were washed off and fixed, then put in alum, and in about forty minutes from the commencement he had the pleasure of looking through and at two negatives, crisp and full of detail as compared with his ghosts, were of much benefit to him. And he promised to look in the glass before he said very forcible things about *some* particular plates again. Yet how many readers of this have done the same thing, and then used intensifier and paint, while the fault lay quite within their own reach, and they unable to see or know it. The directions for development of an instantaneous (?) plate are simply go slow and use lots of brains. The surer rule is never use a snap shutter where anything else will do. It requires time to do anything, and even a dry plate must here have time. The better the time is proportioned to the subject, and the more brains used in development, the better the resultant negative, and there is no exception to this rule. (See Dr. Vogel's article in *Philadelphia Photographer* for December, page 379.)

The quick plate has its uses, and one of them is dim-lighted interiors, where the development must be very carefully done in order to obtain any detail; and it has been my own good fortune to have a taste of some of this work recently upon a bronze statue in a "poke-hole" lighted sort of a place, with a top light streaming in through windows innocent of soap or scrubbing-brush or sand, and the light utterly unmanageable and only about four feet wide, all on the head and the shoulders of the object. A fast plate noted for pin-holes was first used, then the Stanley was exposed *one minute* with a fast lens. Two beautiful negatives were obtained. This was done by a moderately strong developer, held by as many grains of bromide of soda as grains of pyro was used, and when the detail was fairly out, gradually strengthening the developer until the proper density was reached. The chasing-tool marks are plainly seen in the prints.

Then a bas-relief was to be "took," and Ripley plates, exposed two and one-half and three and one-half minutes, were treated in the same way with beautiful results; and then the Cramer yellow label plates were tried, exposed four and five minutes, and, except the Cramer required a little more pyro than either of the others, they came out with exquisite detail, making the marks of chasers' tools so clear, that one of the managers named the men who chased different parts of the bas-relief, from his knowledge of their individual peculiarities, when he examined the photographic print—for the chasers each do some peculiar style of work—and the plate had so completely fastened these apparently unimportant marks, that every man was identified from "his tool-marks," and in the original, some of them were little, if any, broader than the body of a pin.

All these dark subjects were developed with Newton's standard, using "E. A." pyro, using an inverse process to the snap shutter to the extent of starting the development.

One thing more and I am done. The wit of the emulsion-maker makes or breaks the plate in its success. Some of our many plate makers to-day care more to furnish a faultless plate than to "scoop" the customer. "Plate busters" should support such makers at a higher price than the emulsion experimenter, who pleads the baby act when caught in his or their blundering.

Plate users should study and see how fine negatives can be made, and follow their judgment instead of any formula. Go for results, and "you will get 'em" and less "expensive experience." It's a safe rule to drop a plate that floors you four times in one year. There are good plates to be had, and some honorable dealers and makers.

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[*From The Photographic News.*]

WHO SHOULD HAVE THE HONOR?

BY H. P. ROBINSON.

When Sheridan's son told his father that he had been down a coal mine for the sake of being able to say he had performed such an exploit, his father, with a morality that may be easily appreciated in our own times, replied that he could as easily have *said* he had been down without actually descending. It seems to be an equally simple-minded proceeding now-a-days for a photographer to take his own photographs. There was a time when an amateur felt that the least that could be expected of him was to select the subjects and make the exposures, but "we have changed all that," and would-be-thought-photographers can now get everything done for them from beginning to end. It is, I believe, true, or at any rate "well found," that a firm of photographers at Niagara supply exposed but undeveloped plates of the Falls, so that all that is necessary to become a photographer is to buy one of these plates, send it first to a developer, then to a printer, afterwards to a mounter and framer, and, finally, contribute it to an exhibition, and take a medal with it. It is inconvenient that several identical prints may be sent in with the names of different producers on them, for I hear that the enterprising American photographers are doing such a roaring trade, that they have ceased to expose their plates on nature, and take them from a transparency; but this is a risk that has been run for years by those who buy sky negatives and use them as their own.

It seems almost absurd to ask the question, in reference to the taking of a successful photograph, "Who should have the honor?" but it is now a well-known and much-to-be-regretted fact that medals are sometimes awarded to men who had nothing to do with the production of the picture to which the awards were made. I know of one case a year or two ago, in which the taker of the medal first saw the picture to which the honor was awarded, in the exhibition itself. It may be legally honest for an employer to claim the credit for work for which he has paid, but it is artistically a crime for one man to put himself forward as the producer of work which was due to the genius—or, to put it more mildly, the persevering talent—of another. If this was followed out to its logical conclusion, the winning of medals would be a mere matter of money. The one who could afford to employ the best talent would have the advantage over all others. Sometimes the best-intentioned jurors are defeated by the very persons they try to help. Some years ago a jury of the Photographic Society of Great Britain endeavored to do justice, in awarding a medal to the School of Military Engineering, by adding the remark that the medal was intended for the actual producer of the picture, and not to the general, unpersonal "School." The officer under whose charge the school was then conducted, replied that it would be contrary to etiquette to mention the name of the individual photographer, and the Council of the Society rather weakly gave way, and allowed the medal to go to the School; and the same thing has occurred over and over again down to the present exhibition. In the art of war the general usually has the credit of a victory, and the same principle seems sometimes to be understood in lesser arts, such as photography, perhaps because a medal may be as difficult to divide as Birdofredum Sawin supposed glory to be, when he said the glory never got down to the ranks.

> "An' s'pose we hed, I wonder how
> you're going to contrive its
> Division, so's to give a piece to
> twenty thousand privits."

It was afterwards ingeniously argued that the function of the jury was to determine which *picture* merited recognition, not which photographer. This was not a bad retort, as far as it went, if the picture was a sentient thing, which could accept a medal when offered to it; but common sense would surely suggest that it is the producer of a success who should be decorated. That this is so, is evident. Medals are usually stated to be awarded to Mr. ——, for his picture No. —, and the theory is, however erroneous the assumption may be, that the exhibitor is also the producer.

In only one instance do I remember a master modestly declining to take the credit for pictures produced by his assistants, and we have to go to America for our example. At the last American Convention a medal was awarded to Mr. Ryder for a noble display of photographs; but with a frankness that, as things go, did him more honor than any medal could, he declined to accept credit for work done entirely by his assistants.

Can anything be done to remedy the evil? It would be impossible for jurors to inquire into the truth. When a man, otherwise unconvicted of falsehood, sends a picture to an exhibition with his name on it, the managers of the exhibition are bound to believe that it is his own production, and treat it accordingly. I am afraid redress must be left in the hands of those who are least able to help themselves—the employed. In the case of firms there may be some difficulty. It must be acknowledged that to exhibit means, more or less, to advertise, and it is certainly more profitable to advertise the firm than the individual members of it. I knew of one firm that got over the difficulty by taking as nearly as possible an equal hand in every picture made to exhibit under the name of the firm, and if either of them got a particularly bright inspiration that could not be shared by his partner, the result was always exhibited in the name of the individual; the medals for other productions were divided.

Notwithstanding what I have said above, I see no objection to a photographer accepting assistance in the production of his picture. The materials, tools, and the mechanical parts of production should be kept distinct from conception, and are only rational aids to results. This view of the matter was very ably put some years ago by an anonymous writer in the *News*, whose remarks I paraphrase. Both painters and sculptors have assistants; in some instances it is well known that these assistants have acquired such ability as almost to carry out the whole work of their masters from the sketch which illustrates the conception. Again, for the sculptor who has made his model in clay, a great part of the work is carried out by other hands than the artist's, but under his guidance. For all that, on beholding the finished picture or statue, it is evident that both painter and sculptor are the alpha and omega in the production of these works. So also with photography as an art. To conceive and to carry out the production of the negative of his picture is, with the photographer, to produce and be the author of the work. It is no more necessary for him to have prepared his plates or mixed his developer than for the painter to strain his canvas or grind his colors. To sum up: if a man wants safely and honorably to put his name on any photograph, and call it his own, the subject and arrangement should be of his own conception. What he does by the hand of another should be under his own superintendence and guidance, and the delicate and important parts, such as exposing and developing, which require matured judgment, should be done by himself.

[*From The Photographic News.*]

NOTES ON THE GELATINE EMULSION PROCESS.

BY DR. J. M. EDER.

1.—*Phenylhydrazinsulphonic Acid as a Developer.*

I RECENTLY published a communication upon the property which I had discovered in phenylhydrazin of acting as a photographic developer.

I have continued my experiments, and found that phenylhydrazinsulphonic acid, when employed in an alkaline solution, possesses the same developing properties upon bromide and chloride of silver. In many points this compound appears to excel the hydrochlorate of phenylhydrazin, because chlorine salts act as restrainers.

2.—*General Reduction of Intensity in Too Powerfully Developed Plates.*

I have tried almost all reducers, and have only been satisfied with the peroxalate of iron and potash, recommended by Belitski. This salt, however, does not keep well, and is not everywhere to be met with in commerce. On this account I have employed the following mixture of perchloride of iron and oxalate of potash.

A.—1 part of perchloride of iron in 8 parts of water.

B.—2 parts of neutral oxalate of potash dissolved in 8 parts of water.

Immediately before use, mix equal parts of A and B. A light green solution is formed, which in darkness keeps for several days; in the light, one day suffices to decompose it.

Of this mixture a little is added to a fresh strong solution of hyposulphite of soda; in difficult cases, to each part of fixing solution from a quarter to a half part of iron mixture may be used.

The picture is rapidly and evenly reduced in this bath. The plate is washed before the desired degree of reduction is quite reached, as the process of reduction goes on during the washing.

This reducer works satisfactorily upon plates that have been much over-developed, either with iron or pyro, and may even be used upon plates that have been dried. It is, however, to be recommended that it be used before drying, as its action is then more under control.

3.—*Reduction of Over-dense Portions of a Plate.*

It often happens in photographing interiors, etc., that certain portions of the negative come too intense, while other parts possess the proper amount of intensity, and must not be reduced. In this case reduction should not be accomplished by chemical means, or the use of baths, but by rubbing with a piece of linen moistened by strong alcohol. This method was first communicated to me by Herr Lenhard, in Vienna. I saw many good results thus obtained, and succeeded perfectly myself with the method, which I can, therefore, thoroughly recommend.

A piece of fine linen is dipped in alcohol, and rubbed with considerable pressure on the too-intense portions of the dried plate until they are sufficiently clear. The linen becomes black, and the intense portions thinner, without loss of detail.

Small places can be cleared with a little stick of pliant wood that has been dipped in alcohol. I saw at the atelier of Herr Burger, difficult retouching accomplished in this manner.

4.—*Citrate of Iron Developer for Warm Brown Tones upon Chloride of Silver Gelatine Films.*

A very favorite developer for transparencies upon chloride of silver gelatine plates, and also suitable for paper, is the citrate of iron.

It is prepared by mixing an acid solution of citrate of ammonia with sulphate of iron.

I have now simplified the preparation of the ammonia citrate solution, and my formula is as follows:

700 c. c. of distilled water are poured upon 150 grams of citric acid, and 160 c. c. of ammonia (sp. gr. 0.910) are added, and stirred. In a short time the citric acid dissolves in the solution, which, at the same time rises in temperature. The solution is then tested with litmus paper to see whether it is neutral or slightly alkaline; if strongly acid, more ammonia is added; if strongly alkaline, a few crystals of citric acid are thrown in.

When the solution shows a neutral or slightly alkaline reaction, 100 grams more of crystals of citric acid are added, and, when dissolved, the whole is filtered.

To develop chloride of silver pictures, take

15 volumes of ammonium citrate solution.
5 volumes sulphate of iron solution (1 to 3).
1 volume chloride of sodium solution (1 to 30).

This developer can, as is known, be used repeatedly.

5.—*Acid Chloride of Silver Gelatine Emulsion.*

Chloride of silver separates in a flocculent precipitate more readily than bromide, and therefore it is well to add a good quantity of gelatine to the solution of chloride of sodium, as well as to that of nitrate of silver. This proceeding has already been described, and after many experiments I have settled upon the following formula.

Three solutions are prepared in flasks:

A.—Chlor. of sod. (or 13 grams chlor. amm).		14 grams.*
	Gelatine	25 "
	Water	200 c.c.
B.—Nitrate of silver		30 grams.
	Water	50 c.c.
C.—Gelatine		25 grams.
	Water	250 c.c.

The gelatine is dissolved in flasks A and C, by immersing them in warm water; the gelatine solution C is then poured into the silver solution B, and shaken, then (by yellow light) the chloride solution A is added. The temperature may be at from 40° to 50° Cent. The emulsion is left standing for a few minutes until the froth disappears, when it is poured out to set; afterwards it is divided, and washed out as usual.

Chloride of silver is mostly employed without further ripening, because then it gives clear reddish-brown images.

The emulsion, in thin films, appears by transmitted light reddish-yellow, and very transparent. Nevertheless, it gives powerful pictures.

After cooking for half an hour, or digesting for a longer time at 40° the color of the emulsion becomes gray by transmitted light, and the sensitiveness is increased from two to four times. The transparencies or paper pictures obtained with such an emulsion have a colder and more neutral tone than is given by the uncooked.

The addition of one drop of hydrochloric acid to the emulsion keeps the pictures clear. Citric acid, from 10 to 20 grams to the foregoing quantity, produced light-colored (yellowish or reddish-brown) pictures.

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PAPER NEGATIVES.

BY T. G. WHAITE.

[A communication to the Edinburgh Photographic Society.]

I BRING before you to-night what has been called a new departure in photography—that of making negatives on a paper support. Seeing that the earliest negatives produced were by Fox Talbot's method, the calotype and old wax-paper process, I think it is somewhat of a misnomer. Of more recent date we find Warnerke and Morgan & Kidd have made a commercial article for the same purpose. You will find also in the *Photographic News* in 1882, and the "Year Book" for 1883, a method of coating paper in continuous lengths with emulsion, illustrated with diagrams, to which is attached my name.

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* It is much the same thing whether the one or the other chloride be employed. Chloride of ammonium gives somewhat softer pictures than chloride of sodium. The sal ammoniac of commerce (chloride of ammonium), when in the form of crystalline powder, contains much moisture which must be driven off by heat (100° Cent.) before being weighed. Sublimed sal ammoniac occurring in large masses, is, on the other hand, seldom moist, and does not require hot drying. For chloride of sodium we recommend the pure salt, which may be weighed without previous drying.

What is really new in the method now before the photographic world, by an American company, is the preparation of the paper to receive the emulsion, not the coating of the paper with the bromide of silver; this can be done in several ways without infringing any patent. What the Eastman Company claim is this. They state that, having made the discovery that the net-like surface of paper in its ordinary state causes an uneven deposit of emulsion, it consequently, in developing, causes a greater density of image in the thicker interstices than is desirable. To remedy this evil, they coat the paper first with an insoluble gelatine, then subject it to great pressure, and afterwards coat this leveled-up paper with sensitive emulsion. From my experience of their films they certainly effect their object. I have produced, to my mind, most satisfactory negatives on these films; the only difficulty at present is the want of a reliable, simple, and less disagreeable method of making the paper transparent.

The plan at present is to use castor oil hot, until complete saturation of the paper takes place. Now I find everybody kicks against the castor oil; it was a lesson early instilled or otherwise got into them in the nursery, and they have never made friends with it since.

Making the films transparent, then, is not a difficult matter. Now comes the trouble. After printing off a number of prints from a negative, the oil gradually becomes less and less, from pressure in the frame, and "grain" begins to appear. It is all very well to say oil again, but it must be borne in mind that after you have oiled first—mind your retoucher does his work; now, if you attempt reoiling, off flows the black-lead.

What you want is something as stable as the old wax method, with the same transparency that castor oil gives. I do not doubt that as soon as the process becomes more known and applied, that some of our experimenters will accomplish this much-desired end.

I am sanguine enough to believe that in time paper will entirely supplant glass for our films; and I believe, in capable hands, it will be the means of making our photographs more worthy the name of works of art, not only on account of its portability and lightness, but, from the nature of the support, we shall be enabled to do more work on the negative (in the right direction, I hope) that we are now prevented from doing on glass, in adding effect and suppressing undesirable and obtrusive detail, as work may be applied to both sides of a paper negative—on the emulsion side for detail and crispness, and on the reverse for softness and broad effects.

We may possibly, by these means, obtain something akin to a painter's sketch. The artist painter says the great evil of photography when applied to picture making is the immense amount of detail a sharply focused negative possesses. If we could suppress or obliterate some of this detail, which the mechanical photographer considers the perfection of his art, I feel we shall gain a power we have hitherto not possessed—viz., breadth and simplicity. This will only be of real service to the photographer who has a knowledge of his art, and knows how to apply it.

The landscape photographer will find in its lightness, as compared with glass, its chief recommendation; he will also find in making interior pictures an utter absence of his old enemy, halation. There will be also the entire freedom from dust particles when traveling, for no matter how carefully we dust our slides, after traveling a few miles a new crop will be found on the plates over which the picture will be taken, the result of which will be pin-holes, etc. Now, with a roller holder and a band of paper this need not be the case, as the paper may be kept rolled up and safe from dust until the very moment it is required for exposure.

Another advantage of the roller holder will be our almost entire independence of a dark room when traveling; each holder taking twenty-five pictures, and weighing about the weight of four glasses with their double slides, we shall with one charge have a supply for a good day's work, and should we require to change any, it can be done quite as well in perfect darkness as with a light (say, under cloth and a portmanteau). We can go on firing away our twenty-four filmers until darkness puts a stop to it. All this, I think, in the very near future.

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[*From British Journal of Photography.*]

SUGGESTIONS IN CONNECTION WITH LANTERN SLIDES.

BY C. BECKETT LLOYD.

THE lantern season is rapidly approaching; and no doubt most amateurs are commencing, if they have not already done so, to prepare new slides from the negatives taken during the past spring and summer. Such being the case, may I crave permission to make one or two suggestions through your columns, which possibly some of your readers may think proper to assist in carrying out.

The standard size—that is, the outside measurement of lantern slides—has been pretty well fixed at 3¼ inches square, or at any rate the height of the slide has been fixed at that, the picture itself still remaining a square or circle. It has long seemed to me that while this shape of picture, so far as regards paper prints, has been considered inartistic and, as a matter of fact, suits but a small proportion of the subjects presented to the camera, it is somewhat anomalous that for lantern purposes very little departure is ever made from the square or circular shape. It is very rarely that we see a lantern slide in which the respective dimensions of the two sides vary in greater ratio than 2¾ to 2½. Occasionally we meet an oval, and with very exceptional subjects, such as lofty interiors, sometimes a picture of what may be called a "taller" shape. Now comparing the dimensions mentioned with, say the 12 x 10, which is by many considered too "square" for the most artistic effects, we find that, if multiplied by four, we have the dimensions 11 x 10, or a still nearer approach to the square. Surely what is inartistic in one case should be equally so in the other.

That the large majority of lantern slides by good makers pass muster very well as artistic productions is due, there can be little doubt, to one of two causes: either the subjects as originally taken are such as suit the square or circular shape, or else only such existing negatives are utilized for the purpose as will permit such a shaped picture to be taken from some portion. That this is so in my own case I know very well, but out of a large number of negatives of various recognized sizes but few will permit of conversion into lantern slides of the conventional shape. The composition is usually arranged to adapt itself to the full size of the plate, and if that size be, say 7¼ x 4½, it is one which lends itself badly to the production of a square picture, as the excised portions are nearly certain to remove some part of the subject essential to the completeness of the composition. On the other hand, in some cases where the original negative is long in proportion to its height, two separate pictures may be made from it, but these chances are few and far between.

Now in view of the immense number of negatives of awkward sizes for lantern purposes that must be lying idle in the plate boxes of amateurs, would it not be well to depart somewhat widely from the established custom? It only requires some bold individual to make the start, and the walls of conventionalism would soon be stormed. No doubt at first there would be some little opposition to the innovation, and the unaccustomed shapes of the pictures would have an unfamiliar and perhaps unpleasing look upon the screen, but I think that might be lived down. If the Photographic Society or the Photographic Club would try the experiment in a small way, a good start would be made.

Another suggestion I would make is a practical one, and aims at dispensing with the paper mask usually mounted between the transparency and its cover glass. I effect this by printing on to the slide itself a photographic tint or mask, and the result is a much neater appearance and a saving of trouble in mounting. With my system it involves not the slightest extra trouble beyond the expenditure of a few seconds more of time, and certainly pleases me better than the old style. I have a number of accurately-cut glass plates, 3½ inches square, and for greater accuracy have ground the edges. In the center of each is cemented a square, circular, oval "cushion" or dome-shaped mask, cut out of the usual black paper, while strips of card-board, ⅛ of an inch wide, are glued round the edges to form a sort of well. I have a small 3½-inch square printing frame, into which these fit pretty closely. After the exposure has been made for the transparency, the mask best suited to the subject is dropped into the printing frame, and the exposed plate is placed face downwards in the "well" and exposed for two or three seconds to gaslight. In this manner the margins of the plate are impressed with a developable image, and when the picture is brought out it is surrounded by a dark band, which takes the place of the ordinary paper mask. As I invariably varnish my transparencies, there is no risk of injury to the developed image from contact with the covering glass.

An extension of this idea is in the direction of vignetting, and may be mentioned before I conclude. I do not refer to the method of vignetting in which, as in ordinary portrait vignettes, the picture gradually fades into a white margin, though very pleasing effects are to be got in this manner. My method is just the reverse. I vignette the picture into the dark mask, which has frequently an excellent effect, though it does not suit all subjects. The vignetting masks are made in carbon tissue by exposing it in the ordinary manner for producing a portrait vignette, some distance behind an aperture of the desired shape. If this aperture be of the right size and its distance from the sensitive tissue properly adjusted, and, above all, if the printing frame be kept revolving during the exposure, a very beautiful gradation is obtained, no matter what the shape may be.

I think amateurs, as a rule, would improve their slides very much if they would exercise a little more care in the finishing, as, no matter how good the picture may be as a photograph, its beauty is marred by slovenly finish and mounting.

I WOULD not be without the BULLETIN for ten times its cost.

L. B. SHAW.

[*From The Photographic News*]

FOCUSING.

Given a good subject, well lighted, a suitable point of view, high-class apparatus, with the best plates that can be made, and the most advantageous method of development, etc., if the focusing is badly done, the picture is a failure. Focusing is so simple an operation in most cases, that photographers are liable to think that it must always be simple, and that if a picture sharp all over does not come by working the pinion or screw with a sufficiently small stop in the lens, that the subject is an impossible one for the camera. Is not the use of a very small stop often expressive of laziness and rule-of-thumb work, rather than the result of an intelligent carefulness?

The sharpness that is so much sought after by a certain class is, after all, only a matter of degree. The precision that must be obtained in technical copying, where the resulting print has to bear magnification, is out of place, and may even be repulsive in a landscape or portrait. At the same time, it must not be understood that we view smudginess or indecision with any other feeling than disgust; the point is, that absolute sharpness is unknown, and that what we call sharpness is only a comparative quality.

The old rule is doubtless a very good one—to get the object of interest in focus, and make the best you can of the rest; but, like many other excellent rules, it is broken every day with advantage. Indeed, what is the "object of interest?" In a portrait, undoubtedly the face, goes without saying; but where is the face in the picture of a back view, which may be as strikingly like as any other view of a person? And this difficulty is enhanced in simple landscape. We cannot say of this tree-stump, this rock, or this very ordinary looking basket or wheelbarrow in the foreground, or of this group of persons in the middle distance, any more than of the hills beyond, that it is the object of interest; each part is good, but the whole is beautiful; it is not an object of interest with accessories—it is a picture.

But we cannot photograph this picture, because we cannot get it all in focus at once. A small stop makes it all sharp, as it is called; but an exposure of forty—or even thirty—seconds will not be suitable for the group of persons, although they are standing still, and those fine cloud shadows with such an exposure would be nothing but ill-defined patches of fog. We try to divide the picture for two plates instead of one, but the two plates must be exposed simultaneously from the same point of view, if they are to match—an obvious impossibility.

In many cases such a difficulty would disappear if we were bold enough to purposely have rather less sharpness in the near foreground than in the middle distance; but, by doing so we should break one of the Ten Commandments of photography. Whether such a procedure is good or not in any particular case, cannot be decided upon general grounds, but we think there are reasons for definitely allowing this license to the photographer who knows how to use it.

We want the picture to suggest the reality. Now, most persons enjoy binocular vision, or, in other words, they see from two points of view simultaneously. But these two points of view are so near together that a distant object appears as if from only one point of view, while the representation to us of a near object is the result of the merging of two different pictures, one on each retina. This gives the well-known sensation of solidity, but at the expense of *sharpness*. We venture to think, therefore, that a sharpness somewhat toned down in the foreground may be pictorially advantageous at the same time that it is practically convenient, and that if the "object of interest" method of focusing were sometimes to give place to such general considerations, the careful photographer who knows how to bestow his care would sometimes be less troubled when focusing.

THE FIRST ANNUAL EXHIBITION OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

November 17 and 18, 1885.

Report of the President.

The auspicious beginning made by this society in its first annual exhibition of photographs, leads me to believe that it will be an easy matter to make future exhibitions much superior, both in character and merit. Upon all sides we hear words of commendation; and it should be the aim of every member to prepare for the next exhibition now, in order that nothing but the very best work shall be presented.

Much of the success of the exhibition rested upon the indefatigable labors of the House Committee, chief of whom should be mentioned Mr. Charles W. Canfield, Chairman, and Mr. C. W. Dean. To the former was due the credit of devising a legible label by which classification of the pictures was easily determined; also in perfecting arrangements for having the proper backgrounds put up, and in obtaining the collection of pictures not intended for competition. Mr. Dean lent his assistance in the hanging of the pictures, as did also Mr. D. H. Walker and Mr. Gilbert A. Robertson.

Mr. L. W. Seavey loaned us, at a low price, three sets of border gas-lights for illuminating the pictures at night. On the second night a fourth set of lights was kindly loaned gratuitously by Mr. Kelly, gas engineer of the Bijou Theatre, for which he received my thanks. This addition made the illumination more even and better, but, unfortunately, the number present was small, compared with the attendance of the previous night, as it had not been generally understood the exhibition would be open on two evenings.

On the evening of the 17th the exhibition opened, being held on the large floor below, rented specially for the purpose. The public were admitted at 7.30 P. M. The demand for tickets having exceeded the supply, it was soon observed by the officers that the general interest was greater than their expectations, and before 9 o'clock the large room was fairly crowded with ladies and gentlemen, friends of members, who pressed forward to gain a close glimpse of the pictures.

The Judges, Mr. George W. Pach and Mr. S. O. Davidson, were seen scanning the pictures, walking hither and thither, but soon retired to the room above and came to their decision as to what pictures should receive a diploma.

Shortly after 9 o'clock notice was given that the lantern slides sent for competition would be thrown upon the screen in the society's lantern in the room upstairs. With the assistance of Mr. D. H. Walker this was very successfully done, but the room was oppressively crowded, making it difficult for many to see. The exhibitors included Prof. L. H. Laudy, who had sent some forty-eight assorted slides of line-work, colored slides, astronomical, snow crystals, spectrum, micro-photographs, engravings, duplicate specimens of the wet and dry process slides, in which the wet showed the clearest; Mr. L. P.

Atkinson, who exhibited thirty slides of instantaneous pictures made with the detective camera, some of which were extremely sharp and clear; Mr. William Chamberlain, eight slides, one or two being very picturesque, particularly that of a sloop at anchor at Hell Gate; Mr. Randall Spaulding a dozen, not for competition, one of a group of a Kindergarten school being especially good; also a group of cats; and lastly, a dozen beautiful slides by Mr. James E. Brush, embracing the Delaware Water Gap, White Mountains, and a composition subject, "The Picaninnies," a group of darky children in front of an old country house, and a little girl seated upon a white pony, which was awarded the diploma for the best lantern slide.

It is needless to add that Mr. Brush's slides were the most admired of all, not only for their clearness, exquisite detail and warm, brown tone, but also for their artistic merits. They greatly pleased the ladies, who took more interest in their general beauty than in their technical qualities. At the termination of the lantern exhibition the audience dispersed, and at 10.30 the lights were turned out.

Many visitors, including many prominent in photographic and art circles, viewed the pictures the next day, on the 18th, when they were seen to much better advantage, the daylight making the peculiarities produced by different methods of toning more easily perceived. On the evening of the 18th the lantern exhibition was repeated, Mr. Brush assisting me.

A partition eight feet high was run up from the floor, made to conform in general outline with the shape of the room, or L shape, the longer arm facing Thirty-second street. It was covered with slate-colored silesia, and formed a background pleasant to the eye and sufficient to nicely relieve the pictures, which were hung more with reference to groups than that each exhibitor's exhibit should be by itself. And while this perhaps made the exhibit, as a whole, more symmetrical, yet it tended in a measure to confuse.

The plan carried out had been to select the best of each person's exhibit and put that up, then to arrange the surplus in such place as they would fit. By this means it was difficult to take in at a glance all of one person's exhibit, and to distinguish what was intended for competition and what for exhibition only. An improvement in this respect may be looked for at the next exhibition. Beginning at the east end of the room towards Fifth avenue, we find hung at the upper part of the partition, for exhibition only, twelve excellent 6½ x 8½ pictures, made on Cramer plates, forming the joint exhibit of Mr. and Mrs. Robert W. De Forrest —for Mrs. De Forrest, it should be said, is much interested in photography, and aided considerably in taking these views, as the exposures were made when on a yachting cruise in Egypt. The titles given the pictures were as follows:

Grove of the Academy, Athens; Old Olive Tree, Mount Hymettus, Athens (very fine); Columns of Temple Korn Ombos, Egypt; Freight-boat on the Nile, anchored near shore, sail down; Water-bearers on the Nile; Market Place, Egypt (miscellaneous group of natives); Group of Merchants, Egypt; Freight-boat on the Nile under full sail, also natives rowing (instantaneous); Pulpit in the Tomb of Kaid Bey, Cairo; Pylon of Temple at Philæ and Group of Natives; Cook-shop, Girgeh, Egypt; South Gate of the Cascaba, Tangier, Morocco. The photographs indicated, by their remarkable clearness, the brilliant actinic atmosphere of that country.

Next came the exhibit of Mr. L. P.

Atkinson, of Brooklyn, N. Y., who perhaps made the most extensive display of his own entire work of any one exhibitor, which embraced several different kinds of photographs. There were twenty-eight 4 x 5 detective camera views, including city, street, Brooklyn, and several marine views. They were printed upon ready sensitized paper, and were sharp, rectilinear and good.

Twelve 4 x 5 detective views around Lake George.

Eighteen photo-micrographs; one, the hair of a bat, took a diploma; others were of the eye of robber-fly, tongue of blow-fly, and diatoms, all being sharp and clear.

Nine 5 x 8 views, including the Obelisk in Central Park, a waterfall near Lake George, two standing fancy figures of a lady, residence and view on Lake George, group of chickens, bridge in Prospect Park, interior of a parlor.

Twenty stereoscopic views, one instantaneous—of a rooster perched on a stump-shaped watering trough—which was awarded a diploma; while others comprised portraits, landscape and marine instantaneous subjects.

Thirteen enlargements from 4 x 5 negatives; four upon bromide paper direct from the negative, and six on glass from transparencies; that of the fountain in Central Park taking the prize diploma on account of its extreme sharpness and good lighting; four transparencies enlarged from small negatives, which were excellent in their way.

Next in order was Mr. W. H. Gilder's exhibit, nicely mounted on maroon velvet backing, comprising sixteen 5 x 8's. These embrace views of Gunpowder Falls, Maryland; group; St. John's Church, Baltimore County, Maryland; Farm-house, Baltimore County, Maryand; beef cattle; a county seat; two New York street views; two church interiors, the latter being especially meritorious for their clearness, sharpness and detail. There were also three 4 x 5 views, two in Baltimore and one on Madison avenue, New York (instantaneous).

Adjoining Mr. Gilder's exhibit was a neat, large frame by Mr. R. A. C. Smith, having in it, very artistically arranged, thirteen 6½ x 8½ views, including scenes in the Thousand Isles; inclined plane; three street views in Havana, Cuba; Morro Castle, Havana, Cuba; Newburgh Centennial (both being instantaneous); two waterfalls; and a comical scene which came under the classification of "Halt!" and represented a donkey drawing a two-wheeled wagon on the beach, having one man in the wagon whipping and another at his head pulling, both doing their best to start him. It was remarkably natural and also very ludicrous. An excellent view of the entrance to Llewellyn Park was included; also twelve detective camera views, marine and street subjects.

Gilbert A. Robertson's exhibit, part of which was next to Mr. Smith's and another portion located at some distance, embraced twelve 5 x 8 views, one of which was of a fish hung up by the mouth, which received the diploma for still life. Other views represented the road General Grant came down to obtain the distant view from Mount McGregor as he took his last ride from the cottage. In the road could be seen the stone marking the spot where his bath-chair stopped. Another view was the same that he witnessed from the chair. Others included several groups in the woods at Mount McGregor, one of an artist in the act of sketching General Grant's residence. There were also eight 6½ x 8½ views of General Grant's rooms, the chairs which he sat in, his death-bed, and the newspaper reporters; the fire-place in Mount McGregor Hotel; an excellent view of the Flood Rock explosion from Eighty-ninth street; four 4¼ x 5½ studies of figures; two 4 x 5 Palmer's Falls, Hudson River, N. Y.; four 3¼ x 4¼ street scenes in St. Augustine, Florida (detective).

We next noticed, adjoining the preceding, Mr. H. G. Runkle's finished exhibit, embracing ten 6½ x 8½ views, including a Cove at Lake George; three views around Lake George; Newburgh Centennial (instantaneous), showing cannons firing broadside salutes; two interiors, one of a sea-shore cottage taking the diploma for interiors; group playing on the sand, good surf effect (instantaneous). Also detective camera views, including eight 3¼ x 4¼ Lake George; dog sitting up; Plainfield, N. J.; picture of a lady in foreground, picking white daisies, distant mountains for background, which received the diploma for class of landscape with figures. The distant effect of the mountains was remarkably good.

Dr. P. H. Mason's exhibit consisted of eighteen 6½ x 4¼ views beautifully finished, labeled as follows:

"Just the Pool for Trout;" Teeter Bridge (girls sitting on it with stockings off as if they had been wading); on Peekskill Hollow Creek (fine reflection on a Seed plate; it received the diploma for class 16, Rustic Bridge); at the brook; residence of M. S. Beach, Peekskill; old bridge at Yorktown; along a country road; along Peekskill Hollow Creek; summer residence of Henry Ward Beecher, Peekskill; at Asbury Park; Hudson River steamers; cottage at Lake Oscawana; distant view of Lake Oscawana; a cascade in the Highlands; Peekskill Bay from Simpson Place; a country seat at Peekskill; "By the Roadside;" girl sitting on a rail fence; entrance to Henry Ward Beecher's grounds, Peekskill.

There were also two 8 x 10 views made with a single lens and drop shutter which were excellent for detail and sharpness—a Firemen's Parade at Peekskill and the N. Y. State Camp at Peekskill.

Mr. John E. Dumont, of Rochester, N. Y., a corresponding member, exhibited four black walnut frames of views and two framed enlargements. The peculiar method of mounting adopted, and the exquisite, delicate, pearl-like tint imparted to the skies, attracted much attention.

One frame contained a series of 6½ x 8½ marine views; the picture of an old schooner sailing at moderate speed, entitled "O'er Sunlit Seas," was especially good, and received the diploma of class 4, Marine—Sail or other vessels.

A second frame contained an exquisite view of a Niagara snow scene and other attractive landscape views.

A third frame had five picturesque landscape views; one of "The Water Wheel that Never Runs any More," being particularly noticeable for its fine detail and artistic finish.

A fourth frame was intended to represent composition subjects, and the picture entitled "Listening to the Birds," consisting of a lot of children under some trees and looking up as if in the act of listening, was especially creditable for its artistic beauty. It was readily accorded a diploma for the best group not taken under the skylight. Other views entitled "Selling Baskets," "The Roadside Smithy," and views of boys sitting on a fence, were all excellent.

Two enlargements by Mr. Dumont were quite creditable, one entitled "Over the Seas" being especially prominent. The other was an enlargement of "Selling Baskets," and appeared to be an imitation of the Millais composition picture.

Coming next to Mr. Dumont, we notice a series of excellent views and cloud effects, fifteen in number, by W. H. Bartholomew, including eight 5 x 8 landscapes; a view at Budd Lake, N. J.; a waterfall near Montclair, N. J.; and two 5 x 8 landscapes with figures, also one 6½ x 8½. Of architecture, two 6½ x 8½; views of cloud effects, one 6½ x 8½ and three 8 x 10; one 8 x 10 street view in Bloomfield, N. J.; and a composition picture of a small boy dressed up in man's clothes with a newspaper under his arm. A diploma was awarded this for class Expectation.

Mr. Randall Spaulding exhibited thirty-four 5 x 8 pictures, a number of which represented beautiful cloud effects, landscapes and composition pictures. A cattle scene entitled "Cattle on the Passaic," was extremely well done; its peculiarity consisted in the perfect reflection of several cattle in a stream of water. The titles of some of his pictures were as follows:

Landscapes: Scene off the Rockaway; the two bridges; study in light and shadow; Pequannock Bridge; Lake Elizabeth; Hyannis, Mass.; Pequannock River. In classes: Cattle in the Rockaway; A Discovery; Narcissus and the Nymph (a boy leaning over a bank looking into the water, showing good reflection); Surf at Hyannis; Hyannis port; Return of the Fisherman, striking sail; two pictures of Montclair churches; two interiors (clear and sharp); four portraits. In cloud effects: The sun drawing water (which took the diploma), and After the Storm. Two pretty pictures of still life: Resting; Old Blacky. Street view: Elm street, Montclair, N. J. (fine light and shade). Others: Girl at the well; fishing scene, the latter showing a man with long fishing-pole in act of anxious expectation—the idea was admirable; across the Rockaway; Pine Brook, N. J.; across Green Brook, Caldwell, N. J.; above and below the Aqueduct, Little Falls, N. J.

The platinotype pictures, six 5 x 8, by Mr. J. H. Maghee, coming next to view, were the most beautiful of their kind to be seen in the exhibition. Two were picturesque views on the Bronx River, N. Y.; one on the Hudson River, under the Palisades; another on Wappinger's Creek, N. Y. A diploma for the platinotype was accorded to the view on the Bronx, entitled Early Spring. One entitled Fishing Boat in the Surf, took the diploma for Surf, class 3. The natural effect of the water and foam, forming, as it did, a fine background for the dark boat and figures, showed excellent composition. The sixth picture was entitled Blacksmiths, three men in the act of telling and listening to a story. There were also two 5 x 8 views of figures in Greek costumes; three 5 x 7 studies in white drapery; two 5 x 8 views at Seabright, N. J., fishing boats; two 5 x 8 pictures of animals, one, pigs feeding, quite natural and odd; another, a kennel of foxhounds; also two 5 x 7, one a horse's head; another, two colts feeding; two 4 x 5, one a pug dog, the other a Skye-terrier; seven 5 x 8 entitled Fishermen at Seabright; playing lawn tennis (the dark foliage in background well brought out); cloud and sea; view in Keene Valley, Adirondacks; ducks at Seabright; crowd viewing Flood Rock explosion; on the Bronx; A Pleasant Path and A Shady Road, both taken against light, and quite clear and good; interior of a studio. Four pictures 5 x 7: three portraits of a young girl—lighting excellent, one being a platinotype on linen; the fourth, of an elderly lady reading.

Mr. Dexter H. Walker exhibited six

4 x 5 views, which were little gems in their way.

A fine cattle scene, the original a 5 x 8, and a beautiful carbon enlargement of the same by Allen & Rowell, of Boston, Mass., was sent by Mr. Francis Blake, corresponding member, of Auburndale, Mass., and easily won the diploma for Animals, class 11. The enlargement was presented to the Society by Mr. Blake, and will form an attractive feature among the photographs hung on the walls. The position assumed by the different cattle, as if suddenly stopped by a peculiar noise, was extremely natural.

Mr. Frederick A. Jackson, of New Haven, Conn., corresponding member, was awarded two diplomas—one for the best landscape view without figures, representing Forest street, New Haven (sunshine), extremely well done, both in an artistic and technical sense; the other for a composition picture entitled Halt! consisting of a young lady seated upon a bicycle, held upright by the usual bicycle frame. The background of thick green leaves contrasted very prettily with the white dress of the subject. In all Mr. Jackson contributed twelve frames, comprising seventeen 5 x 8, one $6\frac{1}{2}$ x $8\frac{1}{2}$, one 8 x 10. His subject sembraced, in addition to those previously mentioned, views on the bank of Stony River; old stone bridge, East Haven; October sunshine (view in Orange, Conn.); looking up and looking down Stony River, East Haven; The Short Turn, Farmer's Drive, and Indian Head Road, in East Rock Park, New Haven, Conn.; a swamp picture, morning. Views about New Haven, Conn., as follows: College street, looking south; Battell Chapell, Durfee and Farnam Halls, Yale College; Durfee Hall and Tower of Battell Chapell; a hazy morning; residence of Prof. Marsh; Church of the Ascension. "An American Reverie," or, an ancient family mansion; "Meditation" (a little girl with a doll); a group, "Out for a Drive," some children playing. The architectural and landscape views exhibited excellent work, and the agreeable warm tones imparted to the prints were specially noticeable.

Four $6\frac{1}{2}$ x $8\frac{1}{2}$ interiors by Mr. Franklin Harper were very well lighted, extremely soft and sharp, and attracted attention by the beauty of the rooms themselves, and the handsome furniture and bric-a-brac ornaments contained in the same.

Mr. Charles Muller contributed seven pictures, three 8 x 10, one of which was that of the Church of the Redeemer, others of architectural views in Astoria; also four 5 x 8—two of architecture and two of portraits. The point of view of the Church of the Redeemer was well selected.

Perhaps the largest number of marine views sent by a single exhibitor was that of Charles Wager Hull, one of the old-time amateurs. His collection numbered seventy-six $6\frac{1}{2}$ x $8\frac{1}{2}$ views, two-thirds of which were of yachting and boat scenes; and it must be said many of them indicated careful manipulation and were extremely clear and sharp, some being really artistic. They were sent for exhibition only. Others comprised local views near New Rochelle, N. Y., and portraits out of doors, all of which showed good technical skill.

Mr. Edward M. Franklin exhibited eleven 5 x 8 pictures, three of which were portraits; one of a gentleman, with open newspaper in hands, seated in a chair out of doors in front of some very pretty foliage, receiving a diploma for the best portrait not taken under a sky-light. The others were street and architectural views in Flushing, N. Y., also a view of Loon Lake, Franklin County, N. Y.; a very striking marine view, entitled Splash Rock, Kennebunkport, Me., in which the ocean spray dashed high over the rock; reflection on Moussam River, Me.; on the deck of the U. S. Steamer Tennessee, excellent as a type of marine architecture. All of the pictures were made with a Morrison wide-angle lens, 8-inch focus.

The tasteful and attractive way in which Mr. Ralph McNeill, one of our youngest members, mounted and framed his series of twenty-five 5 x 8 views was highly commended, and afforded an example to many of the older members which should be heeded in the future. Mr. McNeill had endeavored to show a specimen of a majority of the different classifications, so that his exhibit was quite diversified, including cloud effects, landscape, animals, street, architectural, marine and other views. The toning of his pictures was remarkably well done; their clearness was beautiful; and the negatives apparently must have been perfect.

These architectural views were much admired, and as a reward for his labor he was awarded a diploma for a view of a cottage at Elboron; also a second diploma for a street view, the subject being the Academy of Design, corner Twenty-third street and Fourth avenue, with a horse-car in the foreground.

One or two views of sheep grazing in Central Park was quite artistic.

It should be mentioned that the pictures were in a large frame, backed with maroon plush, not glazed, and demonstrated very plainly the advantage of each exhibitor's exhibit being by itself.

Dr. H. G. Piffard exhibited an interesting platinum enlargement of a flash of lightning on Long Island, as viewed across the Sound from Greenwich, Conn.

Mr. H. Edwards Ficken had two very pretty studies in platinotype; one, styled Evening, representing a window with a faint light shining through it. The other was an interior.

For exhibition only, Mr. F. C. Beach sent twenty-six 4 x 5's, representing views in Hartford, Conn.; Buffalo, N. Y.; Stratford, Conn.; portraits, composition subjects, etc. Others, sent for competition, comprised six 6½ x 8½ views, including Hudson River scenery at Iona Island, a colt, a Japanese dog, the steamer Alaska in Erie basin, and four 4 x 5 views, one of General Grant's funeral procession, interior of sea-side cottage, an oysterman's hut, and a New England public school.

Eleven 5 x 8 landscape views, contributed by Mr. Philip Meeder, were particularly admired for their artistic and sketchy qualities. In addition were two beautiful cloud pictures, 5 x 8; also one instantaneous view of ferry-boats crossing the North River, a cattle picture, and one excellent interior.

Mr. C. W. Canfield exhibited eight pictures, comprising flowers, such as bunches of chrysanthemums, orchids, roses, which attracted much attention on account of their artistic lighting and other interesting qualities. Other pictures of still life (Japanese figures, curios, etc.) were well done; also several interiors. He received diploma for a bunch of flowers.

Mr. L. P. Mapes exhibited thirty-two detective camera pictures, eighteen being boating and bathing scenes at Shelter Island, N. Y., two at New Rochelle, N. Y., two in New York City, five in New York Harbor, three of Coney Island scenes, and two at Glen Island, N. Y. One noticeable quality of these pictures was that they were uniformly sharp and good, and generally well brought out. They indicate the pleasure one may have in carrying about a small portable camera.

Three 6½ x 8½ pictures by Mr. W. H. Sanford, two of which were beautiful landscapes and one a group of children by the roadside. The composition of one landscape was especially good as regards light and shade and point of view.

Mr. R. Baker had one of the best collections of 3¼ x 4¼ (twenty-five in all) detective camera work, inclosed by a neat frame, to be seen in the exhibition. The views were of street scenes and buildings around New York, and were admirably sharp and distinct. The tone of the prints was all that could be desired, considering that ready sensitized paper had been used.

In a large frame were sixteen fine 6½ x 8½ photographs representing views in Buffalo, N. Y., the Bronx River, Niagara Falls and the Catskills, all beautifully done.

An elegant frame of nine 8 x 10 pictures, sent for exhibition by Mr. John J. Wilson, entitled A Quiet Chat, wet plate; Deer's Leap Mountain and Harbor Islands; Black Mountain, from Cliff Cottage; Sabbath Day Point; Hewlett's Landing, from Cliff Cottage; Paradise Bay and schooner Meteor.

In addition to the framed views, were six others taken near the same place. They comprised the picturesque scenery on Lake George, near Sabbath Day Point.

Two views of Cliff Cottage and Porch of Grace Chapel were particularly noticeable for their good composition and selection of point of view.

Twenty-four pictures sent by Mr. S. M. Hyde, were interesting from the fact that they included quite a variety of subjects, and also were very well done both in composition and lighting. Of 5 x 8's were the following: Whippany River, N. J.; brook near Morristown; country road; skating in Central Park; Hudson River at West Point; steamer Bristol; city residence; Rectory of St. Thomas' Church; interior; five portraits; four cabinet portraits; group at tennis; group in hammock; horse and carriage; group, kittens asleep; Christmas cards; view on Fifty-fifth Street, shanties.

Mr. William Chamberlain exhibited sixteen pictures, several of which excellently represented steamer life and groups on board the City of Rome; and one or two instantaneous effects of a steamer plunging into a wave during a storm, the spray being plainly seen dashing over the bow. A view of the Flood Rock explosion from Astoria was also interesting, because of its full detail and good location on the plate; also one interior and three portraits.

Dr. A. H. Elliott contributed five 6½ x 8½, consisting of two instantaneous views, one on the Hudson, of a schooner, showing excellent reflection and fine cloud effects; another of the steamer Pioneer, noticeable for its sharpness and crispness; and three landscapes on Lake Oscawana, N. Y.; one 5 x 8 of a lodge gate at Park Godwin's residence, Roslyn, L. I., overgrown with foliage; and two 3¼ x 4¼ distance views.

A neat frame, of fourteen 5 x 8 and three 4 x 5 views, exhibited by Mr. H. M. Grisdale, were highly commended. They embraced many picturesque views on the Bronx River, three in the Catskill Mountains, two in Putnam County, N. Y., and one in Canada. Had they not been for exhibition only, a diploma would have undoubtedly been awarded. Each picture was well lighted, full of detail, crisp, sharp and clear.

A little gem, 3¼ x 4¼, framed, and entitled a view on the Ammonoosue, sent by Mr. W. I. Lincoln Adams, was very much admired for its picturesque qualities. A window transparency was also contributed by him.

Mr. H. N. Tieman contributed sixteen 5 x 8's, comprising one interior, one surf view picture taken through a car window while the car was in motion; a yacht on the Hudson; view on Palmer Lake, Colorado; a sketchy view showing Belvidere Tower in Central Park; and miscellaneous landscape views. The tone of some of the pictures was a little flat, but the composition and subjects were good.

Lastly, mention should be made of the fine interior of a New York City Catholic Church, printed from a paper negative 24 x 36, presented to the society by Mr. George G. Rockwood.

Close upon eight hundred pictures were hung, contributed by thirty-seven exhibitors. Next year the number of exhibitors should not be less than seventy-five, and it is hoped every member will take an interest in the matter commensurate with its importance.

F. C. Beach.

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ALBUMEN PAPER.

As cold weather has now set in, we would remind our readers of the importance of keeping their solutions and their albumen paper of about the same temperature, say between 60 and 70 degrees Fahrenheit.

If the paper is very cold, and the water used for toning or washing is of a much higher temperature, or *vice versa*, there is danger of the albumen softening, and either coming off the paper or making the prints look mealy.

It is very important to keep this always in mind while John Frost, Esq., is around.

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Your paper is the best for amateurs that I have yet seen, and the correspondence column is particularly valuable to struggling amateurs who have only the crude instruction books to guide them. G. J. Smith.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

Regular Meeting, Nov. 10th—*Continued.*

Mr. Ficken—You could not get it too strong, because a strong solution is as good if not better than a weaker solution.

Mr. Allen—The stronger the solution the quicker you can fix your negative.

The *Chairman* (*pro tem.*)—If you get your hypo too strong for use, and intensify your plates, put it in a strong hypo bath—you will find it dark where it commences in point of density.

Mr. Ficken—My way of using hypo is this: I always use a fresh hypo bath for every series of pictures I develop. I simply put the quantity which I think is about right in the tray, and it will dissolve ten times faster than in a bottle. It is a very simple way, and a very easy way, for, as soon as your plate is developed and washed, the hypo is all ready for it. The more confined it is, the longer time it will take to dissolve.

Mr. Beach—There is one advantage of sprinkling the hypo in a tray, especially in warm weather. You have a solution that has been mixed up three or four days, and after you use it several times, the temperature of the solution has become the same as that of the air, and, therefore, may be warm. If that is so, if you will simply pour your hypo into a tray, and sprinkle a few crystals in it, at the time you are ready to use your plates, you will find it will be cooled down quite considerably.

Mr. Canfield—I think, in practice among professional photographers, that the way of doing it which Mr. Roosevelt described is the prevailing one. I think they go at it entirely by "rule of thumb." At least, those whom I have ever talked with on the subject do it in that way. As to the method of keeping the hypo, that depends on the way which different people have for utilizing the dark room. Of course, where you improvise a dark room, the tray is the only practical way. But where you have a special dark room, I think any one who has not tried the use of a dipping bath will find it more convenient. It sets up easily, being vertical, and it is always ready for use, and there is no danger of spilling it.

Mr. Beach—You omitted to say that you used a dipper.

Mr. Canfield—I could not use a dipping bath very well without it.

Mr. Wilson—I know a professional photographer who has a dipping bath made of wood and asphalt; and he puts both wet and dry plates into that bath; and he uses it day in and day out; and the solution is not out of that bath more than once in six months; and he adds water as it evaporates, and throws in some more hypo.

Mr. CANFIELD—What does he get—ordinary results?

Mr. WILSON—He gets fair results. He is doing work for engravers, and commercial and advertising work.

Dr. PIFFARD—I have been sometimes in Mr. Roche's operating room, and I think for months I have seen the same old dirt floating around on the hypo.

Mr. ALLEN—In reference to the hypo being used repeatedly, I think it makes a difference whether it is exposed to the light or not. When it is used in the light my plates are stained, and I fancied that I could use it much longer if it was not exposed to the light.

Dr. PIFFARD—Is there any danger of that discolored hypo staining your film? I fancy that it did, and I was afraid of it, and for that reason I use fresh hypo; and how it is that any professional photographer can get on with their old dirty hypo I don't understand, but they do it, and get good work.

Mr. BEACH—The trouble is, it don't show at once. After the picture is fixed and dried, and taken to the light, it looks very clear and nice, and it will remain that way for perhaps six months or a year, or a year and a half, and then the negative will commence to color, and that is due to using the bath when in too old a condition.

Mr. FICKEN—*Mr. President:* I have here in my pocket-book a recipe for preparing hypo baths. It is this: 14 ounces of water to 4 ounces of hypo; and 30 grains of citric acid to 2 ounces of water. Dissolve separately, and then mix; the precipitate must be filtered out, and you can use this perpetually. I mixed up a lot according to this recipe and tried it a long time, and after a while threw it away. It certainly gives a very fine effect. I got it from an English photographic magazine two years ago.

The thing to be remembered in connection with it is, that each must be mixed separately, and combined after they are dissolved, and the precipitate must be filtered out before use. I filtered mine before using it two or three times.

Mr. J. B. GARDNER then inquired if there was an antidote for bichromate poisoning, and stated that it might sometimes happen that the person who was poisoned was at some out-of-the-way place, and would have no time to go for any regular physician, and in that case what would he have to do.

The *Chairman* (*pro tem.*)—In answer to that question, I would like to state that it is only an illustration of the common saying that "where a poison grows, an antidote grows alongside of it," and if the photographer cannot get anything quicker, he can take soap and water and soap-suds, or he can use carbonate of potash or bicarbonate of soda. In skin affections in my experience—and I have had four or five cases of poisoning some years ago, and very lately three cases—I found that nothing did so much good and cured the obstinate effects of the poison as pyro or pyrogallic acid, sometimes combined with salicylic acid, and sometimes rubbed up with glycerine.

Mr. GARDNER—I would like to inquire whether you ever use small quantities of ammonia in the fixing bath as in the wet process? This is quite common. It is considered by a great many photographers of great importance, and under all circumstances they use it. I know I have used it myself for a long time, and I find a great deal of advantage from it, but I don't know how it might act in the way of dry plates.

Mr. BEACH—I would like to ask Mr. Gardner what proportion of ammonia with hypo was used?

Mr. GARDNER—Well, take for example one ounce of hypo to eight ounces of water, and in that you use one dram of ordinary ammonia.

The *Chairman* (*pro tem.*)—Are there any further remarks?

At this point the meeting adjourned.

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THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

THE regular monthly meeting of the Society was held Wednesday evening, December 2, 1885, the *President*, Mr. JOSEPH W. BATES, in the chair.

The Secretary called attention to circulars which had been received from the Hull Amateur Photographic Society, announcing an exhibition to be held in February, 1886; also, a prospectus of the newly organized Camera Club of London.

The death of Mr. William G. Platt, a member of the society, was announced. On motion of Mr. Coates, the Secretary was directed to enter a minute of the same on the records.

The resignation of Mr. William T. Elliott was presented and duly accepted.

The Exhibition Committee reported most favorable progress, applications for space having been received up to this time from about eighty exhibitors, and the number increasing daily. There is every indication also that the exhibition will excel in quality, as well as quantity, of work shown, and it will undoubtedly be the most important affair of the kind ever held in this country.

Among the well known photographers who expect to exhibit, many of whom have carried off prizes and medals at important exhibitions, are:

John E. Dumont, of Rochester, winner of several prizes at the late New York exhibition.

James E. Brush, of New York.

P. H. Emerson, of England, winner of important amateur prizes.

Lieutenant Charles E. Gladstone, R. N.

Captain J. Peters, R. C. A., Canada, who will probably send his celebrated War Pictures taken during the recent Northwest Rebellion, many of the exposures being made during action and under fire.

J. P. Gibson, of Hexham, England, has sent twelve pictures, five of which have taken eight medals or prizes, one picture having taken three.

Messrs. G. West & Son, and Symonds & Co., of England, who are both celebrated for their yacht pictures, and have taken numerous medals at English exhibitions.

Colonel J. Waterhouse, of Calcutta, India.

W. H. Jackson & Co., of Denver.

W. K. Burton, of London.

W. W. Winter, of Derby, England.

J. F. Ryder, of Cleveland, O.

George Bankart, of Leicester, England.

The Lehigh University, of Bethlehem, Pa.

The names of six persons were proposed for active membership, and referred to the Committee on Membership.

Nominations for officers and committees for 1886 were made.

On motion of Mr. J. G. Bullock, it was resolved that the president request the judges at the photographic exhibition to select the presentation pictures for the incoming year from the prints of the members that may be exhibited by members of the society at that time, and that any of the existing rules which conflict with this arrangement be temporarily suspended.

A question in the box asked: "What sort of paint or varnish is the best with which to coat the inside of washing tubs for prints?" Asphaltum varnish, especially that known as Brunswick black, was recommended, as was also paraffine.

Mr. S. C. Nash, of Harrisburg, showed his acme camera and changing box. This camera is most ingenious in its construction, being particularly adapted to the wants of artists, tourists, and others to whom saving of bulk, weight and frequent changing of plates are important considerations. Ten 4 x 5 plates are contained in the camera box, somewhat in the same way as the pictures in a revolving stereoscope, so that they can be brought into position for exposure by turning a knob at the side. Any plate of the lot may be exposed at will, without regard to the order in which they may be placed, an index card at the side showing exactly what plate is in use. On this card the record of exposures is kept, it being removed when full, and kept for future reference. By a simple contrivance, $\frac{1}{4}$, $\frac{1}{2}$, or the whole of any plate may be used, the division being made horizontally or vertically as most convenient, so that on 12 plates from 12 to 48 pictures may be taken. A double shifting front allows the lens to be placed exactly opposite any part of the plate that is to be exposed. All the parts, including the focusing cloth, are attached to or contained within the camera, so that nothing can be mislaid or left behind.

Mr. Cooper, representing the Eastman Dry Plate and Film Co., was present, and explained many of the details of working with paper negatives. He showed a number of excellent prints from negatives made in New York Harbor; also an enlargement, to nearly life size, of a head taken from a card-size paper negative. The enlargement was made on Eastman's bromide paper, especially intended for enlargements. The details were perfect, with no signs of grain, and the color a rich black, equal to a platinum print in this respect.

Mr. McCollin, referring to the pictures shown at the last meeting, taken at night by the light of a lightning flash, showed two interiors taken by lamp light; one coal-oil lamp being used in one case, and two in the other. In comparing these pictures with those made by lightning, Mr. McCollin said that all were taken with the same camera, the same lens and stop, and on the same make of plates. The lamp-light negatives had an exposure of seven hours. The exposure for the lightning pictures was estimated at $\frac{1}{300}$ of a second, though it had been stated that the duration of a lightning flash was $\frac{1}{1000}$ of a second. Assuming the exposure to be $\frac{1}{300}$ of a second, the exposure of lamp-light pictures may be calculated to be 7,590,000 times as long as the other. The negatives were made by Mr. A. S. Barker, of Philadelphia, and were excellent of their kind.

Mr. Walmsley showed an English dark-room lantern, known as the Paragon. The lantern was triangular in shape, two sides being of ruby glass and one of tin. The light was supplied by a coal-oil lamp, which, though small, was constructed so as to give an excellent light, whose intensity could be regulated by a key without opening the lantern. A candle in a spring socket could also be used when preferred. Arrangements were made for ventilation to prevent overheating when the oil light was used.

The meeting then adjourned.

Fifty members and six visitors were present.

ROBERT REDFIELD,
Secretary,

MINNEAPOLIS AMATEUR PHOTOGRAPHIC CLUB.

THE regular monthly meeting was held at the Club's room, December 14th, Mr. A. C. LOWING, *President*, in the chair.

The regular business was gone through with, and three new members elected.

It was decided to procure a competitive badge or pin, subject to the following rules :

Members to enter as many pictures (any size) of exterior subjects taken during the month as they may see fit, at the regular monthly meeting, the entire work on plate and picture to be performed by the competitor.

The best single picture exhibited—taken technically and artistically; merits to be decided by a majority vote of members present—to take the prize, and the print to become the property of the club.

The member winning the badge to hold the same until the next meeting, or until taken from him by the superior excellence of some other member, as decided by the club.

The badge to become the personal property of any member who shall hold the same for three successive monthly competitions.

A committee was appointed to confer with the Library Directors to try and secure permanent quarters for the club in the new building to be erected for the Public Library, Art Association, and Academy of Sciences.

Mr. Brayton exhibited to the club his new detective camera, and the first of the kind seen here. It is very convenient, and complete in all respects.

Mr. C. A. Hoffman contributed to the library several volumes of "Mosaics" and back volumes of the *Philadelphia Photographer*, as well as some French works.

The treasurer reported the finances in a flourishing condition.

R. D. CLEVELAND,
Secretary.

[*From Our Corner.*]

THE LUMINIFEROUS ETHER.

BY LAWRENCE SMALL.

(*Continued.*)

I COME now to a recent theory as to the nature of material atoms. Sir W. Thomson's idea of the constitution of an atom is that it is a vortex ring in, and of, the ether. We have all seen smoke rings made in the air by a smoker, and we have seen the ring moving through the air with the same kind of motion as an india-rubber umbrella-ring has when it is moved along a round stick. Material atoms are supposed to consist of such vortex rings in the ether. If the ether be frictionless, these rings could never have been produced, and must have existed from eternity; but if the ether be not frictionless, the vortex rings will gradually lose their vortical motion, and will ultimately become as the surrounding ethereal medium. Supposing this idea of the structure of the atom to be true, one of two things will happen, according as the ether is frictionless or not. In the first case the atoms would be indestructible; and the principle of the dissipation of energy indicates that all the matter of the universe will aggregate into fewer and fewer but larger and larger masses, and, if finite in quantity, will eventually form one huge mass devoid of heat, of light, and of motion—cold, and dark, and motionless. In the second case, the atoms, though they might endure for countless billions of years, would at the last cease to exist as atoms, their vortical motion having been destroyed, and would become a part of the ether. In such a case the motion would still exist, and in the ether, though it would not exist as a vortical motion; yet it is conceivable that this motion might be so compounded with other motions in the ether as to produce afresh vortices, that is, atoms of gross matter. Thus, on the supposition that the vortex-atom theory is true, and that the ether is not frictionless, while atoms are at one part of the universe being resolved into ether, at another part, and by purely natural agencies, atoms are being produced. So that as fast as matter falls together and aggregates into larger masses (owing to its loss of energy), and so fast as the atoms of matter cease to exist, so fast are they reproduced and distributed throughout the universe to form that nebulous condition of things from which, as we know, the present stellar systems have been developed. Indeed, it seems but reasonable to suppose that those nebulæ, discernible only by high telescopic power, and shining with but very faint light, are nebulæ of more recent origin than those known as planetary nebulæ; and that these in turn are younger than the nebulæ from which the solar system originated, the greater nebulosity indicating the earlier youth.

The conception of the ether as a universal medium affords a material explanation of the force of gravity. We have seen that Le Sage proposed to explain the tendency which all bodies have to approach one another, by a bombardment of matter by extremely fine corpuscles, which showered through space in all directions, a difference in pressure on the sides of bodies being produced by a mutual sheltering of two or more bodies. The known existence of the ether dispenses with these flying corpuscles, and gravity may be accounted for by supposing that bodies near each other produce, by their molecular motions, differences of pressure in the ether by which the bodies are forced towards one another. Vortex-atoms in the ether would suffice to produce the requisite differences in pressure. Besides being probably the cause of gravitation, the ether will very likely be found to be the cause of the other (so-called) attractive forces, electricity and magnetism. Indeed, Dr. O. Lodge has advanced the supposition that the ether itself may be electricity; or rather, that by an arrangement of matter by which an electromotive is set up, the ether may be sheared into positive and negative electricities. In short, this conception of the ether seems to unify all phenomena, all kinds of matter being made up of atoms which are vortices in the ether, each kind of atom having its own peculiar vortical motion; and all kinds of force being resolvable into pressures produced by disturbances within the ether.

Whether this view of the ether as the finality of all phenomena be justifiable or not, it is certain that the ether is "capable of vastly more than any one has yet ventured to guess,"* and there seems to be great probability that a deeper knowledge of this wonderful substance will serve to establish the unity of matter and the unity of force.

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[*From Chemiker Zeitung.*]

INVISIBLE PHOTOGRAPHS.

BY DR. J. SCHNAUS.

SOME years ago a particular kind of photograph had been introduced into the market, which, invisible in the beginning, appeared in a brown color on the albumen paper when a piece of blotting-paper was laid upon the latter and both were moistened. These pictures, known as "magic photographs," were invented and put into the market by the photographer W. Grüne, in Berlin, and the interesting chemical process for their production was taught by Herschel in 1840. Grüne first called these pictures "sympathetic photographs," and as they seem to come in favor again, to judge from the remarks of several photographic papers, I will publish the process of their production, made more certain by my own observations.

The chemical process is very simple. Ordinary well-washed silver photographs on albumen or plain paper, freed from all nitrate of silver, fixed in pure hyposulphite of soda solution, without any gold, are placed in a partly concentrated solution of chloride of mercury, after every trace of the hyposulphite of soda has been removed by washing. The picture will, seemingly, disappear in the mercury solution after a few minutes, by the formation of white chloride of mercury, and by changing the silver also into white chloride, by which process both appear invisible to the eye upon the paper. In diffused light, and with some care, a blackening of the chloride of silver need not be feared, the chloride of silver, as proven, not being sensitive to light when precipitated with chloride of mercury. These photographs become visible by all substances which blacken the chloride of mercury, *e. g.*, by the caustic alkalies, iodide of potassium and hyposulphite of soda; the latter dissolving at the same time the chloride of silver, which being present, this is given the preference, and to facilitate the keeping and transportation, white blotting-paper is soaked in a solution of hypo, which is added in a dry condition to the "magic photographs." As a matter of course, after having applied the chloride of mercury, every trace of the same has to be removed by washing the photographs in much, and if possible warm, water.

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* The Unseen Universe. 6th edition, p. 154.

The chemical combination by which the picture was developed, as described, was taken by the photo chemists for sulphide of mercury, but its easy solubility in warm nitric acid is proof to the contrary. It can also be developed in diluted potash or soda-lye, even in iodide of potassium. I have shown that by mixing chloride of mercury and hyposulphite of soda, metallic mercury in visible globules will separate as soon as the mixture is moistened. Part of this calomel dissolves into a double salt. In a diluted condition the hyposulphite seems also to separate black oxide. I would also draw attention to the most careful removal of the nitrate of silver before applying the bath of hyposulphite of soda (for fixing) or the bleaching of the photograph by mercury will not be completely successful. This is done by adding to the water a little chloride of sodium. Gold, as before mentioned, cannot be used. Ammonia also developing them they have been turned into cigar-holders, the hidden picture appearing gradually while smoking. It may yet be mentioned that the insensitive mixture of precipitated chloride of silver and mercury can be made sensitive to light by adding the smallest quantity of nitrate of silver.

Translated by H. D.

[*From San Francisco Chronicle.*]

CAMERA AMATEURS.

SCENES IN THE AMATEURS' ASSOCIATION ROOMS—ODD AND ARTISTIC WORK.

"A PLEASANT and natural expression—not too serious," has for years been the awful sentence imposed upon sitters before the cameras of photographers. Then, with a feeling of crime rising rapidly in his heart, the muscles of his face becoming like iron, and cold perspiration starting from every pore, the anguish-stricken sitter has dumbly glared while the operator held the timepiece of fate in his hand and counted the slow seconds of the victim's doom. All that has been changed —or might be, rather—by the invention of the dry plate, or instantaneous process of photography. It is said that it might be, instead of that it has been, for the peculiar reason that the dry-plate process has not been adopted by many professional photographers, although there are over 200 amateurs who are successfully using it. Many of the professionals are wedded to the old wet-plate process, and are slow to realize the advantages of the new, if in fact the new has any advantages for the professional, for it is not claimed here that it has. But to the scores of enthusiastic amateurs who have become infected with the mania for photography, the instantaneous process has very many advantages. They go about always seeking something new to picture with their faithful cameras, and what they seek is generally of a nature not to observe any injunction to remain perfectly still and to assume a pleasant and natural expression—not too serious. In fact the favorite subjects of the amateurs are anything but still life or portraits, as a visit to the rooms of the Pacific Coast Amateur Photographic Association, 318 Pine street, will show.

TAKEN ON THE MOVE.

The amateurs prefer something on the go —a race-horse, a yacht, the clouds, a tangle of shrubbery swayed by the wind, a herd of cows—anything with the element of picturesqueness or oddity. The amateurs are insatiable and ubiquitous. The one who was out for a walk with his camera under his arm and saw a balloon just ascending from a public garden was considered particularly lucky. The balloon was "taken," of course, and a finished picture of it hangs as a trophy on the walls of the society's rooms. Those who are only familiar with the cumbersome apparatus laboriously wheeled about in photographers' studios, will be puzzled to imagine how such a subject as an ascending balloon could be photographed without previous preparation. A polite and entertaining amateur who showed a *Chronicle* reporter through the society's rooms explained this interesting point. The amateur, with his snug little apparatus under his arm, is always ready for work. Attached to the camera is a convenient little arrangement called a "finder," which is a camera in miniature. When a yacht, a friend, a pig, a couple of fighting roosters, or anything else, is seen and wanted, the amateur takes a look through his finder, waits until the subject is sighted, touches a spring, walks unconcernedly on and the deed is done. The spring which he touches works a mechanism which exposes the dry plate for less than one-hundredth part of a second, yet a perfect negative of the subject has been taken. The clumsy tripod is no longer carried—only the camera and some plates—and the camera is held in the hands or under the arm, or rested on any convenient object. Many amateurs are displaying a very pretty taste in the subjects of their work, and a new interest is created by the fact that they take so many objects in motion.

YACHTING SCENES.

Yachts and yachting offer an endless variety of subjects. Some of the yachting scenes exhibited in the amateurs' rooms were taken on board yachts. When sail is being made or shortened or reefed; when the yachtsmen are dining, washing up, or in the unsettled condition a rough sea sometimes brings about, then the camera is at work. The reporter noticed one picture which represented a small row-boat, with a single occupant, which was plunging furiously through an otherwise unoccupied waste of water. The picture compelled a second glance, for while the little boat was racing at a rate which dashed the water in foam from its bows, the occupant sat motionless and with leisurely folded hands. It had a more than Flying Dutchman effect, and the reporter was at a loss to account for it until told that it was the small boat of a yacht. It was of course attached to the sailing yacht by a rope, but the operator had so skillfully blurred the rope in finishing the picture that it could not be distinguished from the water. One picture on the wall represented a man who was a vivid personification of all that has ever been written about "the next morning." The man sat at a supper-table with the wreck of what must have been a very merry feast on all sides. A noble array of bottles, glasses half filled, upset and otherwise characteristically disposed, remnants of cigars and cigarettes, some withered fruit and a tired-looking corkscrew were the table's accessories. The victim had drawn his chair near the table, from which he turned his face in weariness, and his countenance expressed his belief that all is vanity and that the brandy and soda would never arrive. The rest of the story is as follows: A party of bachelors passed a night in the quarters of one of them, disposing of their time as bachelors have had a way of doing before and since the days of Charles O'Malley. The next morning there was a weak but plaintive cry for brandy and soda. The subject in the picture was told that he could not have his drink unless he left his bed and took a seat at the table. Not suspecting the trick, he did so, and the camera of an amateur lying on a chair, finished the work.

SEEKING SUBJECTS.

In their trips out in the country, the amateurs have a fashion of making what artists call "studies." A fence corner, an arching oak, a tangle of ferns, a cloud-capped mountain, a scrambling litter of little black pigs, a friendly calf, or frightened hen with her chicks, a plodding farmer—all these and dozens of other such subjects are taken and finished, Some of the amateurs follow peculiar lines of subjects. One pays almost exclusive attention to interiors, and his friends are incited to the most artistic arrangement of their parlors, libraries, bedrooms and dining-rooms by his passion for photographing them. Another has a craze for cloud and fog effects, and many of his pictures would be identified by San Franciscans if accidentally seen in Egypt. Another pays close attention to the details of trees and shrubbery, and his work is also charmingly characteristic of California. It is the general testimony of the amateurs that the desire of the average human being to be "in" a picture is only equaled by his desire to see a finished picture the instant after it is taken. It takes a day to properly finish and mount a photograph from the negative, yet the spectator of the amateur at work invariably expresses disappointment that the picture cannot be shown as soon as taken.

BLUE PRINTS.

There is so much work about printing from the negative, toning, fixing, mounting, polishing and otherwise preparing a photograph from the negative, that sometimes the amateurs make what are called "blue prints." The blue prints are in appearance what their name indicates, and are produced with little trouble, being simply printed and washed, the troublesome process of toning and fixing being omitted. These blue prints, especially in some classes of water views, are very pretty and effective. Some amateurs do even less than this. They take their negatives only and send them to professionals, who print, prepare and mount them. There are professionals who do nothing but this, taking no negatives themselves. While some amateurs are too busy or too indolent to do their own finishing, others do an elaborate amount of work. Double printing comes under this head. Double printing, which may be called decorative photography, is where two negatives are printed on one piece of paper. A gracefully grouped bunch of ferns or stalk of flowers may be first photographed. When it is printed, part of the paper is covered so that a blank space is left in the center, perhaps where a portrait or some appropriate view is afterwards printed, and the work is so nicely dovetailed that it appears to be one print. When the mania for photography takes possession of a man it is said to exceed in strength the passion for French cookery. The camera is as constant a companion as tobacco to a smoker. One young lawyer who has the disease very bad is having a camera constructed to look like a couple of law volumes. Another amateur has had a little dark room built in his grounds at a cost of $750. An interesting feature of the craze is its practical uses, which have been discovered by artists in oils. Several artists have thrown old prejudices aside and use the camera for their compositions. If a group of Chinese actors or a group of barn-yard chickens are to be painted, the faithful camera supplies the composition with absolute truth to nature.

What Our Friends Would Like to Know.

N.B.—We cannot undertake to answer communications of a technical character except through the columns of the BULLETIN. *Correspondents will please remember.*

Q.—G. F. L. writes :—Can you tell me how the Stanley plates can be intensified, and also reduced, after fixing?

A.—Any plates may be either intensified or reduced after fixing; but the hypo should be thoroughly washed out before proceeding with either process. For intensification, we know of nothing better than the corrosive sublimate and sulphite method described in the BULLETIN for April 25, 1885, page 231. For reducing, the method given by Dr. Eder in this number of the BULLETIN appears very satisfactory. See article on "Notes on the Gelatine Emulsion Process."

Q.—J. R. M. writes :—I wish to paper my sky-light room; what color paper would be most suitable? I have a northeast top and side light. Please advise me through the BULLETIN.

A.—Use a paper with a decided gray tint. Don't use blue, it fades rather readily and is not as clear looking as a good gray tint.

Q.—W., N. & S. write:—We could do with some help in our printing power on some of these dull, short days, and have heard that some parties use the electric light for that purpose—that is for direct printing. Do you happen to know if such is done, and whether it is a success or no?

A.—We know of no one who uses the electric light for contact printing. We have made inquiries in this direction, but have received no information. If we hear further we will let you know. We think this method of printing would be successful if the proper conditions were worked out, and a very little experimenting would tell this.

Q.—S. C. B. writes:—I inclose two views of sanitarium. The building unites correctly, but the sidewalks come at an obtuse angle. That is just what I want to know—why the sidewalk is not represented as a straight line, instead of that obtuse angle? The walk descends in a straight line in nature, the building is taken with straight lines—then, why not the sidewalk? My camera was opposite the center of the building and perfectly level. I think I should have placed my camera about a third from the center for each view.

A.—Views received. We do not think that any of the horizontal lines in the two prints sent fit together perfectly if placed on a straight edge. This is owing to the effect of perspective. You will have to place your camera in front of the center of each half of the building and make it perfectly level, taking your negatives so that at some central point in the whole building the pictures will lap over, to allow for trimming down to join afterwards. If this is carefully done and the ground upon which the camera rests is level, your pictures will give true panoramic effects and should match perfectly.

Views Caught with the Drop Shutter.

MULLETT BROTHERS, of Kansas City, Mo., send us a very handsome catalogue of photographic supplies. We note with great pleasure the rapid increase in business, due to the enterprise of these well known stock dealers in the West. From a building two stories high and only fifty-five feet deep, they have increased their business until they now occupy an extensive store, four stories high and basement, and one hundred and twenty-four feet deep. Any photographers, professional or amateur, residing or traveling in the

West, will find these gentlemen carrying every requisite for the art and of the best qualities.

MR. IRA T. COLLINS, of Huntsville, Alabama, has been gaining many laurels in the sunny South for his fine photographic work. He appears to be specially successful with children, and is evidently not suffering from went of patronage, if we may judge from local reports of him. We are always glad to hear of such good work.

BLAIR & PRINCE, of Cincinnati, are out with a fine new catalogue, brimful of cuts of fine apparatus of their well-known designs, They also show a fine list of Dallmeyer lenses and a very useful line of cards and mounts. The whole catalogue is in thoroughly good taste, and reflects well upon this comparatively new firm.

THE PHOTOGRAVURE COMPANY have transferred their books and book-keeper from New York to their works, at Third avenue and Tenth street, Brooklyn, in order to facilitate the transaction of their increasing business. The New York Office, at 853 Broadway, is retained to receive orders and give estimates, etc.

PITTSBURGH again receives back Mr. J. W. MORRISON to its photographic circles. Mr. Morrison succeeds Mr. JOHN I. SHAW.

MR. T. HENDRICKS, the well-known photographer of Syracuse, and State Senator, gave us a call the other day. His visit was a welcome one.

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